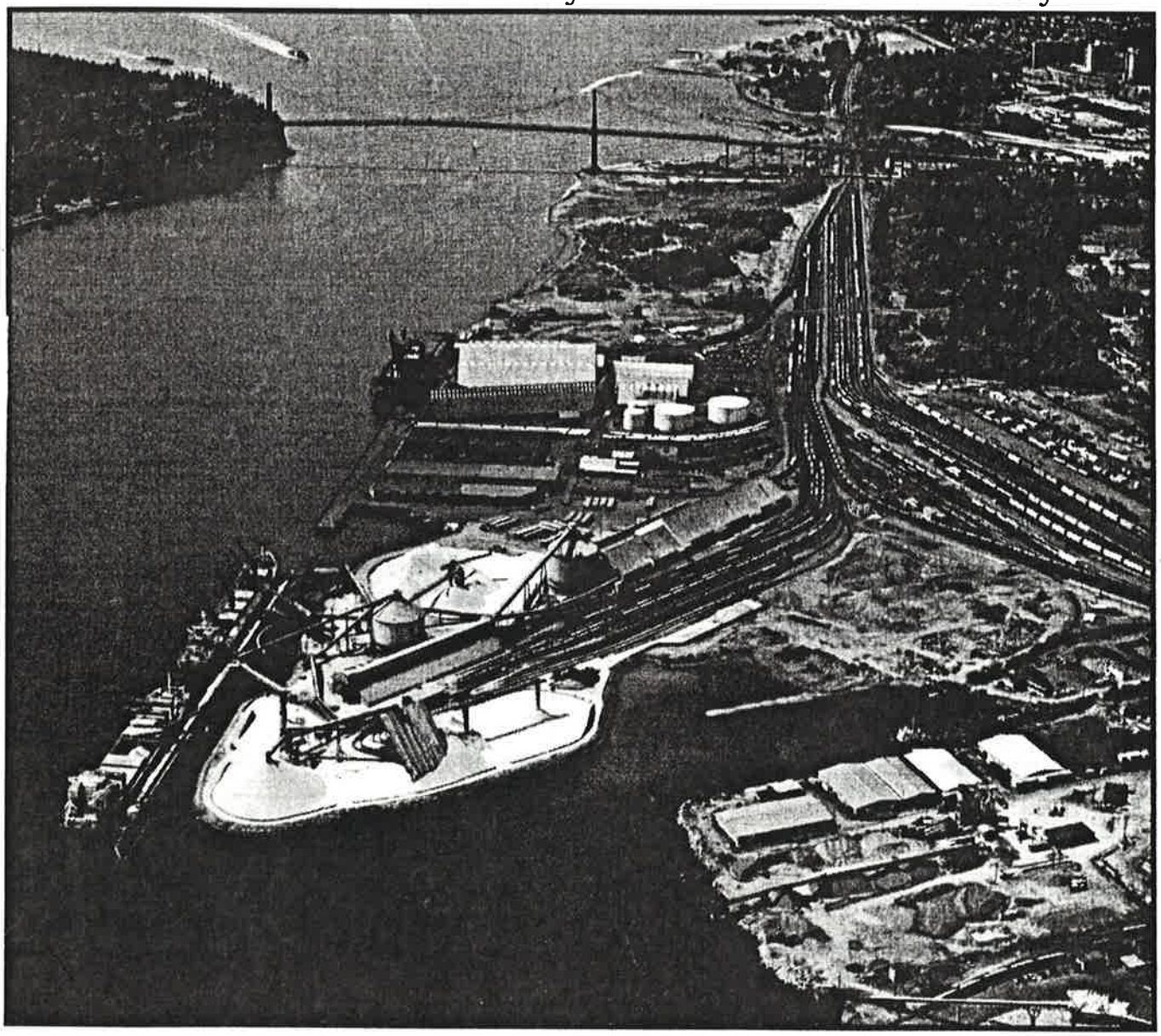
The CARIBOO

The British Columbia Railway Historical & Technical Society



Issue 21

July 1995

Potash Hoppers

North Van Yard

Insulated Boxcars

IN THE NEWS

Edited by Jim Moore

Effective February 1, BC Rail increased its passenger fares by 20 per cent, causing one tour operator to cancel a scheduled charter trip. The provincial government has axed an annual government subsidy toward passenger trains worth nearly $750,000 in 1993. Financial support for upgrading diesel passenger cars has also ended

All seats on the *Cariboo Dayliner* are now reserved, and include meal service. BC-21, the only remaining car with walkover seats, was refitted with reclining seats in February. So *Cariboo Class* now becomes the sole class of service available. With these changes, BC Rail has repositioned itself toward providing greater service to the increasingly important tourism market.

The core fleet operating the new level of service will be seven cars (three RDC-3s and four RDC-1s). They will be assigned as follows:

1) North Vancouver to Lillooet will continue as a daily round trip on the same schedule. At press time, a normal consist of two cars will be operated as has been the practice since last fall. All seats will be sold on a reservation basis, and meals will be provided.

2) North Vancouver-Prince George will operate three days weekly year round. The daily service, formerly offered during the summer season, has been eliminated. A maximum of two cars will operate north of Lillooet. All seats reserved with meal service.

On Our Cover...

An aerial photo (looking westward) of the Vancouver Wharves area plus adjacent BC Rail yard (circa 1993).

In the lower left can be seen VW's sulphur and potash storage facilities. Above that, the woodpulp loading sheds and methanol storage tanks. An in-depth examination of BC Rail's North Vancouver Yard complex begins on page fourteen.

Photograph copyright Allen Aerial Photos, courtesy of BC Rail.

The CARIBOO

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All contributions are welcome. It is helpful if submissions are on a 3.5" disk in IBM Word, WordPerfect, as a "flat" ASCII file, or typewritten.

All submissions are subject to editing as a condition of publication. Material will be retained unless other arrangements have been agreed upon in advance.

The editors encourage submission of photographs and illustrations which help reinforce the content of material submitted. Appropriate captions should be included. Photographs may be either black and white prints, colour prints, or colour slides.

Authors are responsible for all original statements made in their work. Submissions are accepted with the understanding that they are not under consideration elsewhere.

3) Whistler-Kelly Lake will operate as a new summer service (May through September) aimed at tour operators. One round trip will be operated daily. The service will be based out of Squamish with three cars assigned. This new offering will eliminate the delays experienced by the regular scheduled service out of Lillooet, while avoiding carrying empty cars on the trains along the rest of the line.

The new train will operate Monday-Friday, and will depart Whistler at approximately 0830. It will operate non-stop to Lillooet, with an arrival in Kelly Lake around 1220. The return trip will travel with the regular schedule on Prince George train days, and travel by itself on that same schedule on the remaining days. (Glen Etchells, *The Province*, WCRA *News*) ❐

It is with sadness that we report the end of another era in BC Rail history. According to a well-placed source in Squamish, BC Rail will cease utilizing cabooses in revenue service come July. During mid-January, shipments of signaling equipment began arriving in Squamish. Once the appropriate equipment has been installed, the railway will phase in CTC operation. Thereafter, track switches will be remotely controlled from North Vancouver. We've also learned that the amount of radio communication will soon be reduced. Engineers will receive communications from North Vancouver via cab-installed fax machines. ❐

Last October, Robert Swanson passed away at age 89 after suffering a stroke. A man of many talents, he will be remembered for being instrumental in saving the steam locomotives that can be found around BC, on display or running, including the fully restored 3716 and the 20-year veteran, the *Royal Hudson*. And, yes, every time you hear a horn on a BC Rail engine or Budd car, these are the products of Bob Swanson and his company *Airchime*. (See Issue 19, page 18) (BC Rail *Coupler*) ❐

More track work has recently been completed in the North Vancouver yard. Trackage in front of BC Rail's passenger depot and near the CN interchange has been replaced with CWR and steel ties. (BC Rail *Coupler*) ❐

Extra Sections: The *Coast Mountaineer* winter steam excursion to Whistler and Pemberton operated on February 19. Sponsored by the BC Chapter of the NRHS, the run was headed up by Royal Hudson stand-by steam locomotive 3716.

BC Rail's B&B workers have completed the replacement of more than 20-year old timber spans at the Serpentine River bridge on the Port Sub and the Seton Portage Creek on the Squamish Sub with steel and concrete bridges respectively. (BC Rail *Coupler*) ❐

Gettin' in the Christmas spirit: Royal Hudson steam locomotive 2860 was decorated for two special *Jinglebell Express* runs on December 17 and 18. Blue holiday lights adorned the locomotive, while the trailing passenger equipment (the *Prince George* baggage-generator car, four remaining ex CP 2200-series coaches, and all eight cars recently purchased from VIA Rail) featured red lights. Both runs sold out quickly, and more dates are expected to added for the 1995 holiday season. Proceeds from ticket and raffle sales were donated to two Vancouver area pediatric charities. (Ed Note: The *Jinglebell Express* was the last appearance of any of the ex CPR 2200-series coaches in revenue service.) (David Larson) ❐

The eight leased VIA Rail cars that were used on the Royal Hudson train during the 1994 season have now been purchased by BC Rail. The new cars are coaches 5437, 5582, 5595, 5623, 5628, 5652; cafe-bar-lounges 2505 and 2503. In addition, baggage car 9618 has been acquired to replace baggage-generator car the *Prince George*.

The cars are currently painted VIA blue with a solid white band where the two yellow strips formerly were. According to our Squamish Source, all eight cars are expected to be prepared in the tuscan colour scheme of their predecessors. (WCRA *News*) ❐

BC Rail has purchased five further coaches from VIA Rail for its *Royal Hudson* service. The additional cars are 5506, 5594, 5596, 5618, and 5642. This brings the *Hudson* fleet to 1 baggage, 2 cafe, and 11 coaches. (*Branchline*) ❐

The "new" *Royal Hudson* equipment was be named as follows: cafe-lounge, Lions Bay and Horseshoe Bay; coaches, Birken, Brunswick, Capilano, Chasm, Dragon, Exeter, Kelly Lake, Porteau, Seton, Sunset Beach, and Whistler. The first car to appear in its new tuscan livery, as prepared by the Squamish paint shop, was Porteau. Use of the new cars will increase capacity of the *Royal Hudson* to 866 passengers. ❐

Subscriptions to *The Cariboo* are available for $20 USD or $25 CDN for a cycle of four issues. Overseas rates available upon request. In Canada, send check or money order (payable to "Andy Barber") to Andy Barber, 3718 Marine Vista, Cobble Hill, B.C. V0R 1L1. All others send check or money order (payable to "Jim Moore") to Jim Moore, 25729 Floral Court, Valencia, California 91355-2139. Sample issues are available for $5 USD or $6 CDN.

WCRA Trivia: The Universal Studios' 1990 motion picture *Bird on a Wire* (Mel Gibson, Goldie Hawn, and David Carradine) also starred a BC Rail locomotive. Which one was it?

Answer: BC Rail C630m #704, still in the two-tone green colour scheme. (Ryan D. Cruickshank) ❐

Spring and summer are busy months for the CWR Steel Gangs who upgrade portions of the 1,450 miles of BC Rail track. In 1994, CWR Gangs replaced 30 miles of worn track , including 11.5 miles near Lillooet, from Retaskit to Polley. Worn 100 lb. rail was replaced with larger, more durable 136 lb. continuous welded rail.

Eighty-two foot rail lengths from Sydney, NS and Japan were delivered to the BC Rail yard in Prince George. Here it was welded to form one-quarter mile lengths.

Transporting the welded rail sections to the work site is tricky. A special 32-car gondola rail train carried the long, heavy load through the mountainous terrain. On arrival in Lillooet, it was "peddled to the ground", or dropped from the car alongside the track to be replaced. An average of 8,800 feet of rail --about a mile and a half-- was replaced every day over a three week period.

Two months prior, worn ties in the area were replaced in preparation for the new rail. The track was lifted, and new ballast was spread out underneath. About 22 carloads (1,500 cubic yards) of ballast are used for each mile of track.

The new rail could now be treaded, or laid, in place. To guard against expansion or contraction, track must be laid at 85 degrees. To accomplish this, a rail heater is used. Next the thermite welding team uses torches to close the gap between the quarter mile sections of rail. Finally, a form is placed over the gap and molten metal is poured in. (BC Rail *Coupler*) ❐

In Issue 19 and 20, we reprinted PGE advertisements, courtesy of BC Rail. These adverts were part of the railway's 1965 advertizing campaign. ❐

Royal Hudson stand-by loco 3718 will be prominently featured in the soon-to-be-released motion picture, *He Ain't Heavy*. Filmed in Vancouver January 6-15, 3718 operated over the following route: BC Rail to CN interchange point (NVR), past the Rail Centre, over the Second Narrows rail-bridge, to BN at Willingdon Junction (where it met with BN power), through BN's new yard (met with CN freight, including second unit in BCR colours, now HLCX), past BN's New Westminster Station, along CN trackage, past CP freight switching in New Westminster yard, over the Fraser River on swing-span, to CN Mile 7 Yard. 3718 was also spotted across river in Burnaby running on industrial trackage. (David Larson) ❐

West Fraser Timber has broken ground on a medium density fibreboard plant in Quesnel. The new plant, which will cost $110 million, will open in the fall of 1996. MDF is used primarily for furniture and kitchen cabinets. The plant is the first of its kind in the province. At press time it was unclear if BC Rail would play a part in moving this product to market. (BC Rail *Coupler*) ❐

BC Rail introduced a Spring Seat Sale, effective through April 17, wherein travelers could save 20% on trips of 150 miles or more. The qualifying distance of 150 miles pertained to one direction of travel, and all tickets were non-refundable.

This promotion was the railway's first effort at increasing ridership during the off-season or shoulder travel period. (Glen Etchells) ❐

BCRH&TS member David Larson has three of his photographs included in the 1995 BC Rail calendar. Looks for David's work in the months of June, November, and December. (David Larson) ❐

The Williams Lake hog fuel haulers have received their new 48-foot trailers complete with tarping systems. Northwest Energy has extended the loading ramps to accommodate the new trailer lengths. (BC Rail *Coupler*) ❐

UPDATE: We continue to receive comments (**lots** of comments!) in response to David Morgan's maritime operations article which appeared in Issue 18. Here's a sampling of the latest received:

• The *Cottonwood*, which was acquired by the PGE in 1921, was not a sternwheeler. Rather, this vessel had a twin-screw propulsion system powered by a gasoline engine.

• After service with Mayo Brothers Lumber Company, the barge *PGE No. 1* was acquired in 1942 by Granville Island-based Armour Salvage & Towing.

• The barge *Pacific Great Eastern No.3* was sold in 1957 to Island Tug and Barge ltd., being renamed *Island Tug 103*. In 1971, it became a unit in Seaspan International's fleet, being renamed *Seaspan 901*. During 1977, she was sold to T.A. McLaren, of Vancouver (dba Allied Shipbuilders Ltd.), and was renamed *Allied Barge*. The last entry (in the *List of Shipping*) for this vessel was in 1991.

• The tug *Point Ellice* was powered by a single screw engine, with a 475 indicated horsepower.

• The tug *Dola* (Official Number 122157) was built in Vancouver in 1907. It had a length of 96 feet, a beam of 22 feet, a depth of 11 feet, and displaced 157 gross tons. The *Dola* was powered by a single screw engine, with a 39 horsepower rating. The tug was owned by Pacific Towing of Victoria.

• *Annual Report for the Department of Railways*, 1918: "As the railway company's (PGE) agreement with the Canadian Pacific Railway Company covering lease of barge handling the traffic between Squamish and Vancouver expired on June 30th, and that any renewal after that would have to be on the basis of $50 per day rental instead of the old rate of $40 per day, it was decided to buy or build a barge. Tenders were called for construction of a fifteen car barge, but no bids were received. Consequently, most of the barges on the Pacific Coast between San Francisco and Victoria were inquired into with the idea of purchase, and eventually it was found possible to purchase from the Great Northern Railway their transfer barge for the sum of $18,000, which has been carefully examined by competent authority and reported on favourable".

The above entry was submitted as evidence to refute previous reports that transfer barge *PGE No. 1* was built in New Westminster in 1914.

• *Annual Report for the Department of Railways* (1918): On August 7th, the tug *Freno*, rented by the railway company (PGE) at $100 per day, was partially destroyed by fire, and immediate steps were taken to purchase a tug for the railway company. After careful survey of, and report on, the tug *Daring*, of Seattle, this vessel was bought for the sum of $24,000. This tug and barge handle the Vancouver to Squamish and Vancouver to North Vancouver transfer business."

Thanks to Richard Brown, Frank Clapp, Greg M. Kennelly, David Morgan, and Bob Parkinson for this additional information. ❐

CORRECTIONS: In *Car Shop* (Issue 18, October 1994), we included info regarding some equipment stored on the lead track to the Prince George Railway Museum. Member Roy Smith advises us that 5309 and 5667 are 50-foot boxcars. 5309 is not a flanger as previously noted.

Eric L. Johnson advises us of an error which found its way into his wonderful article (Issue 19, January 1995) detailing operations on the Takla Sub. The correct spelling of the name if the Indian band which settled in the Takla area is Gitksan.

PGE/BCR RESOURCES

• The April issue of *Model Railroader* features BCRH&TS member Patrick Lawson's, scale drawings of BC Rail's General Electric GF6C locomotive.

• The May issue of *Pacific Rail News* features an article spotlighting BC Rail's North End authored by BCRH&TS member Brian Elchlepp. Brian's latest article is a follow-up to a piece that ran in *PRN*, June 1989.

• The Winter 1994 edition of the *Electric Railway Journal* featured an in-depth look at PGE sleeper, the *Clinton*. In addition to detailing the car's history, the article contained a floor plan and several photos depicting PGE's other sleepers, the *Barkerville* and the *Pavilion*. BCRH&TS members Greg M. Kennelly, Grant Ferguson, and Andy Wegmuller assisted with this article. (Grant Ferguson) ❐

MOTIVE POWER NOTES

Edited by Paul J. Crozier Smith

Locomotive 4605 is back in service following a 13-day repair job. As a result of an accident, the Dash 8's back end was bent down about three inches. Squamish mechanical staff was able to straighten the frame in place, resulting in a two-week early return to service. (BC Rail *Coupler*)

Two former Santa Fe General Electric B36-7 locomotives arrived on lease in mid February. The engines (#7489 and #7496) arrived via the CP after being run through GE's Erie facility. The units are being utilized on Takla Sub log trains, and will replaced the two *Rocky Mountaineer* units previously on lease. (Paul J. Crozier Smith)

WCRA--BC Rail System Tours

These nine day special charter excursions over BC Rail system have become the headline trips of the WCRA. First offered in 1987, these unique tours of British Columbia have been hailed by participants for the wildlife, the colours, the spectacular scenery, the warm hospitality of the Northern communities, and the professionalism with which they are run.

These tours are a great way to see B.C., and offer an exceptional value when you realize that the price includes rail transportation, bus transfers to the hotel, meals and entertainment. They dates for 1995 are May 20-28, and September 9-17.

Contact Grant Ferguson at the WCRA, Box 2790, Vancouver, B.C. V6B 3X2.

Behind the shot: Veteran photographer Bill Allen used a custom-designed 3000-foot long ladder to capture the photo on our cover. The ladder, which was positioned in the waters of Burrard Inlet, permitted Allen's to capture his unique birds-eye view of the North Vanacouver area.

NEW PRODUCTS

Walthers is advertising a FGE-style insulate RBL boxcar. Among the roadnames offered for this HOscale model is BC Rail. List price is $9.98. Review, anyone?

In Issue 19 (January 1995), we advised readers of Athabasca Scale Models' Canadian National *Pointe St. Charles* wide-vision caboose kit. This is the style caboose utilized on BCR's Tumbler Ridge Subdivision. An N scale version of this etched brass kit is now available, and sells for $56 USD or $67.50 CDN.

Microtrains offers an N scale model of the Thrall 60-foot centerbeam flat car. This item is ready-to-run, is prepared in BN colours, and lists for $17.35 USD.

Manufacturers and distributors of items of potential interest to readers of *The Cariboo* are encouraged to provide samples for evaluation. Unless otherwise agreed upon in advance, product samples will not be returned. Readers are also encouraged to submit independent product reviews for possible publication.

COLLECTIBLE CORNER: In the mid 1970s, the British Columbia Railway introduced a matchbook designed for promotional purposes. Measuring 2 1/8 inches wide by 1 7/8 inches high, the predominate colour was the railway's dark green. The book's front face featured a full colour photo of diesel locomotive #704, along with the slogan "Meeting the Challenge of Northern Development". The back face included the dogwood emblem and the slogan "Moving Resources to World Markets". This item was produced for the railway by Eddy Match Company of Vancouver.

The British Columbia Railway Historical & Technical Society has prototype paint samples available. These colour chips were prepared by Andy Barber using actual BC Rail paint. Included are both greens, silver, red, white, blue, and yellow. Paint formulae info is also included. Send $4 USD or $5 CDN (cash only) to *The Cariboo*, 25729 Floral Court, Valencia, California USA 91355-2139.

Potash Hoppers--As Seen on BC Rail

Jim Moore and Mike Jackson

Introduction

Their brightly coloured carbodies add variety to the otherwise uniform appearance of a typical BC Rail freight train. Painted in colours as diverse as sour cherry, burnt orange, or grey, the potash hopper is one of the more interesting foreign-cars found on BC Rail today. And perhaps it is their colourful nature that provided the spark for this article.

The term potash originally designated potassium chlorate which can be obtained by leaching wood ashes. Today, however, it is now applied in general to a number of potassium compounds.

- Potassium carbonate, a white solid, also called potash or pearl ash, is obtained from the ash of wood or other burned plant material. Alternately, it may be produced chemically by reacting potassium hydroxide with carbon dioxide. It is used in making glass and soft soap.

- Potassium chlorate (chlorate of potash) is a white crystalline compound. It is a powerful oxidizing agent, used in matches, fireworks, explosives, as a disinfectant, and as a source of oxygen.

- Potassium chloride (chlorine of potash), also a white crystalline compound, is an important potassium-based fertilizer.

Most of the potash cars seen on BC Rail today have their origin in the potash fields of Saskatchewan. From there, the cars are transported via Canadian National to the company's Lynn Creek terminal. In turn, BC Rail delivers the cars to Vancouver Wharves, where the commodity is unloaded for export via ocean-going vessels.

The companies

While there are undoubtedly other companies involved in the transport of potash, this feature will focus on the four most commonly observed in and around BC Rail territory. They are: Canpotex, International Minerals & Chemicals, Potacan, and Potash Corporation of Saskatchewan. As you will come to see, each operates equipment as distinctive as their individual corporate colour schemes.

- Canpotex

Canpotex operates two types of railcars in potash service: covered hoppers and cylindrical hoppers.

The covered hoppers were built by Pullman-Standard and feature thirteen ribs and three bays. Loading is done through four trough-style roof openings. The cars, which are numbered in the series PTEX 41xx, (Photo 1) are painted grey with black reporting marks. They are similar in appearance to BC Rail's 2300-series which is used to transport grain.

Although there are design and capacity variations within the Canpotex cylindrical hopper fleet, all cars feature four-bays. Cars within the first major grouping are 59 feet in overall length and a capacity of 3850 cubic feet. These cars carry a 100-ton rating , although in practice this figure is lower due to their limited volume capacity. Referred to as the "3800s", these cars were built by both Marine Industries (PTEX 44700-44799) (Photo 2) and National Steel Car (PTEX 38200-38699). Unlike similarly appearing grain hoppers, these potash cars have shaker attachment fittings on the car sides. The Marine Industries version was built in 1974, while the NSC cars were built in 1974 for Potacan. Originally, all 3800s had four circular roof hatches. However, over time, some cars have been modified to trough-style openings.

The second major grouping of Canpotex cylindrical hoppers is 59' in length with a capacity of 4550 cubic feet. These cars

were built by both Hawker-Siddeley (PTEX 455000-455599) (Photo 3) and National Steel Car (PTEX 456100-456199). The Hawker-Siddeley cars have four circular roof hatches, while the NSC cars feature trough-style openings.

The third major grouping of Canpotex cars are referred to as "extended cylinders". Built by Hawker- Siddeley (PTEX 455700-455900) (Photo 4) in 1980 and National Steel Car (PTEX 456300-456399) (Photo 5), these cars have a body length of 59'-11" and a capacity of 4650 cubic feet. Product loading is done through four circular roof openings on the Hawker-Siddeley cars and via trough-style openings on the NSC cars.

All Canpotex cylindrical covered hoppers are cool grey with trucks of black. Both the corporate name and herald appear in dark green, while reporting marks are in black.

- International Minerals & Chemicals

International Minerals & Chemical (IMC) operates two railcar types in potash service: cylindrical hoppers and covered hoppers.

The cylindrical hoppers were built in 1979 by National Steel Car (IMCX 12000-12599). Leased to IMC Fertilizer, the cars are 59' in length, feature four bays, and have capacities of either 4550 or 4650 cubic feet. Both circular and trough-style hatches have been observed.

The second group of IMC cars is composed of 3-bay covered hoppers built in 1974 by American Car & Foundry. (IMCX 10100-10349). These cars are 54' in length with a capacity rating of 4600 cubic feet. Product loading is done through trough-style roof openings.

IMC's cars are painted a light tuscan red colour, have white lettering, and black trucks.

- Potacan

Potacan operates one type of railcar in potash service: cylindrical hoppers.

Although the Potacan cars are all four-bay hoppers, two different capacity versions have been sighted. The first are 3850 cubic foot capacity cars built by National Steel Car (CGLX 800-909). The second group (within the series CGLX 910-1869) is comprised of cars built by both Hawker-Siddeley and National Steel Car. These are 59-long, with a capacity of 4550 cubic feet.

Potacan cars have a burnt orange carbody, white herald, and black reporting marks. Both circular and trough-style roof openings have been observed.

- Potash Corporation of Saskatchewan

Potash Corporation of Saskatchewan operates a two railcar types in potash service: covered hoppers and cylindrical hoppers.

The covered hoppers were built by Pullman-Standard, and are leased from PLM International. These cars feature 16 ribs and three bays. Two sub-series exist. The first (PCSX 1000-1046) is 56'-7" in length with a capacity of 3850 cubic feet. The second (PCSX 1047-1105)(Photo 6), built in 1969, is 58'-8" in length with a capacity of 4700 cubic feet. Resplendent in a carbody of sour cherry, the cars have white reporting marks. Loading is done through trough-style hatches.

The four-bay cylindrical hoppers (within the series CGLX 910-1869) (Photo 7) are leased from CGTX, were built by either Hawker-Siddeley or National Steel Car. The cars are 59' in length with a capacity of 4550 cubic feet. Similar in overall

appearance, each manufacturer-type has its own subtle differences. Loading is done through four circular roof hatches.

During the early to mid-1980s, Potash Corporation also operated a group of cylindrical hoppers leased from Procor (UNPX 120201-120300) (Photo 8). These "extended cylinder" cars were built by Marine Industries, and had a capacity of 4650 cubic feet. Loading was done through four trough-style roof openings.

Potash Corporation cars have a salmon coloured carbody and black reporting marks. A distinctive feature on at least some of the cylindrical hoppers is the large white stylized corporate logo.

- British Columbia Railway

The British Columbia Railway operated twenty of the former Potash Corporation of Saskatchewan/Procor cars during the mid-1980s. These cars, within the series BCOL 120202-120292, were built in March 1980 by Marine Industries. Featuring the "extended" cylinder body style, these cars had 4650 cubic foot capacity. Loading was through four trough-style roof openings.

The models

Modeling potash cars in both HO and N scales is possible thanks to a selection of commercially available products. Some cars are ready-to-run while others require varying levels of construction. There are kits which offer versions prepainted for some of the companies described above, and there are decals available for those wishing to model the remaining potash companies.

- HO scale

Accurail offers a 3-bay ACF 100-ton covered hopper. The model is a scale 55 feet in length with a 4600 cubic foot capacity rating. An undecorated version of this model is available for $9.98. This kit is easy to assemble and features trough-style roof openings.

Bachmann has a National Steel Car cylindrical hopper, 4650 cubic foot version, with trough-style openings. Pricing is unknown.

CM Shops offers a 54-foot long (3-bay, 16-rib) model of a PS-type covered hopper. Pricing is unknown.

InterMountain Railway offers two plastic versions of the National Steel Car (4-bay, 4550 cubic foot) cylindrical hopper in kit form. The first features trough-style openings and is available either undecorated ($10.50) or decorated ($14.50). The second version has four circular roof hatches. The cars are available in kit form in both decorated ($15.95) and undecorated ($11.50) versions. Among the selections offered is a Potash Corporation of Saskatchewan version (dark rose) and a Potacan version (burnt orange). Each road name has three different fleet numbers available. Fully assembled versions are available for five dollars additional.

The overall appearance of the InterMountain cars may be enhanced by the use of Plano Model Products roofwalk detail parts. Check for specific application.

Car Shop (Lakewood OH) offers an undecorated etched brass kit of the National Steel Car 4550 cubic foot cylindrical hopper. Pricing is unknown.

McKean/Skylim offers a 3-bay ACF hopper. This model, which is based on the 4600 cubic foot capacity prototype, is correct for the IMCX 10100-series car.

Overland Models offers an undecorated brass model of the Hawker-Siddeley 4550 cubic foot cylindrical covered hopper. This model (OMI #0766) features trough-style openings.

- N scale

Atlas has an undecorated version of a a PS-type ribbed hopper with circular roof hatches. Roadnames and pricing are unknown.

C & S Models offers a 4550 cubic foot cylindrical covered hopper with trough-style roof openings. A ready-to-run, undecorated version is available for $9.95.

Micro-Trains has a 4650 cubic foot ACF three-bay covered hopper for $16.95. The model features trough-style roof openings and is ready-to-run.

Gold Metal Products (Garden Grove CA) offers covered hopper detail parts of photo-etched metal.

Decals & paint

Thanks to commercially available decals and paint, producing HO scale versions for all four companies described above is possible. Herald King offers two decal sets of interest. The first (PR-135) is for Potacan's four-bay cylindrical hoppers. This sheet features black lettering and a white stylized herald.

The second Herald King set (PR-137) is for Potash Corporation of Saskatchewan four-bay cylindrical hoppers. This sheet features black lettering and a white herald.

A new decal release from Microscale (HO: 87-809, N: 60-809) provides enough decals to model four separate potash cars. This set covers the Canpotex four-bay cylindrical hopper, IMC's four-bay cylindrical hopper and three-bay ACF-type covered hopper, and the Potash Corporation of Saskatchewan Pullman Standard-type covered hopper. A full review of this new release may be found elsewhere in this issue.

Accuflex's primer grey is a good match for the Canpotex cars. New cars are close to cool grey, while older cars turn to a warm grey --nearly tan-- colour.

Accuflex's light tuscan oxide red can be a starting point for matching the IMC cars. It will probably be necessary to lighten up this colour, so refer to photograph of a specific prototype for accuracy.

This article is intended only as an introduction to the subject of potash hoppers. As with all Cariboo features, further comment by readers is encouraged.

Three members of the BCRH&TS assisted greatly in the preparation of this feature. Thanks to Laszlo Dora, F. John Perry, and Ron Tuff for providing research data, photographs, and most of all, for sharing their modeling expertise.

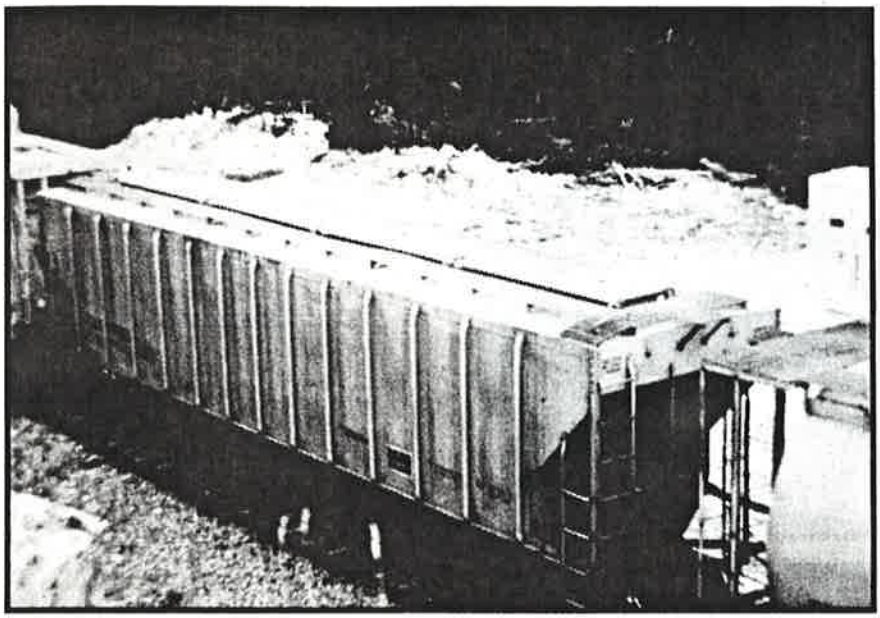


Photo One
PTEX 4123
Rogers Pass BC
October 1992
F. John Perry Photo

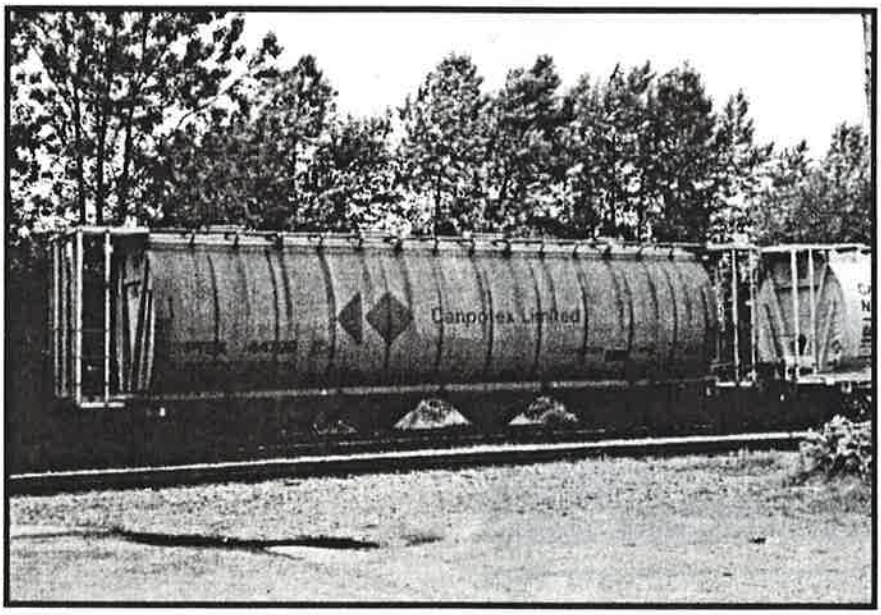


Photo Two
PTEX 44799
North Vancouver BC
June 1994
Jim Moore Photo

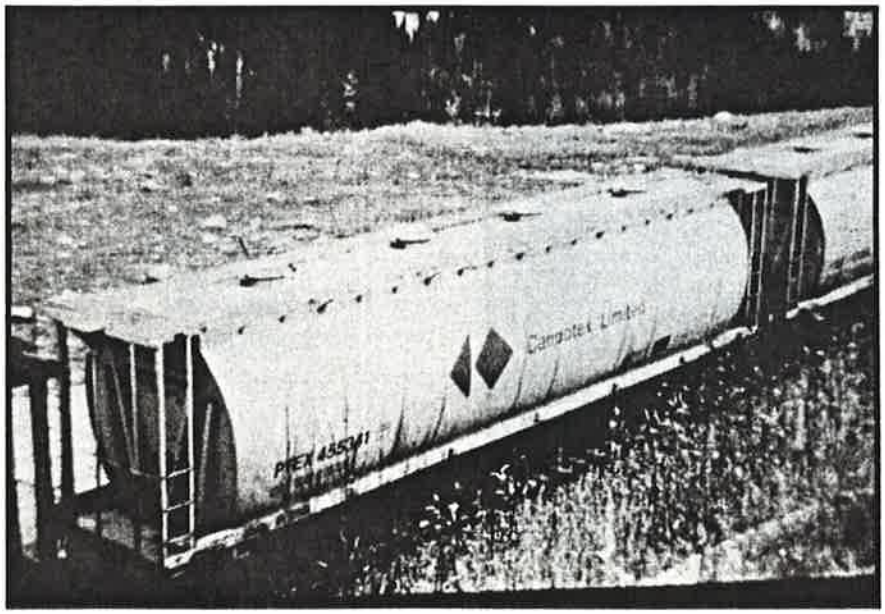


Photo Three
PTEX 455341
Rogers Pass BC
October 1992
F. John Perry Photo

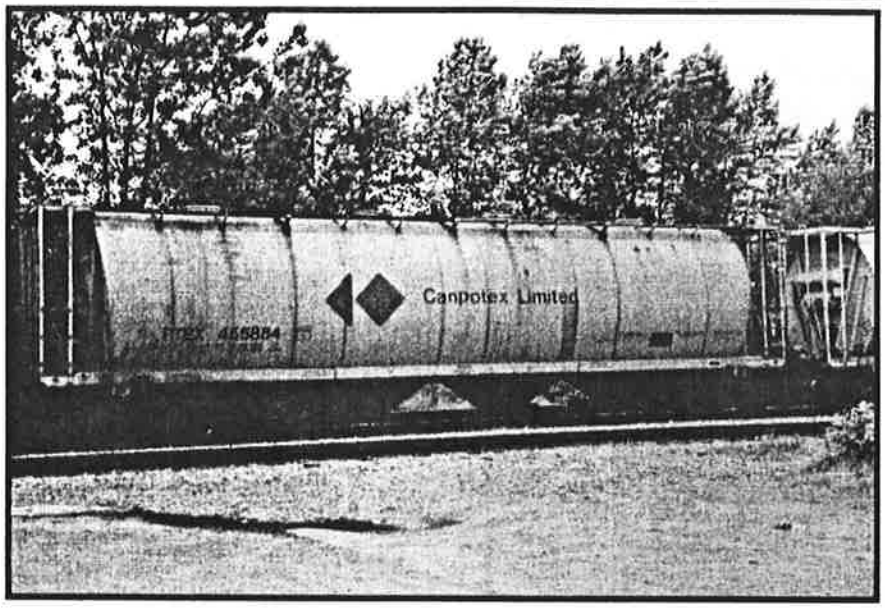


Photo Four
PTEX 455884
North Vancouver BC
June 1994
Jim Moore Photo

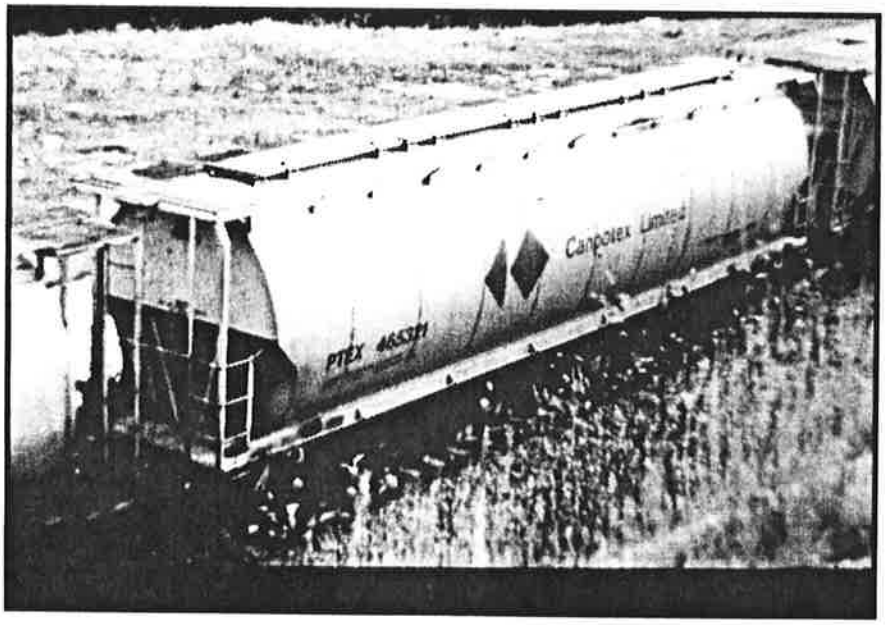


Photo Five
PTEX 465321
Rogers Pass BC
October 1992
F. John Perry Photo

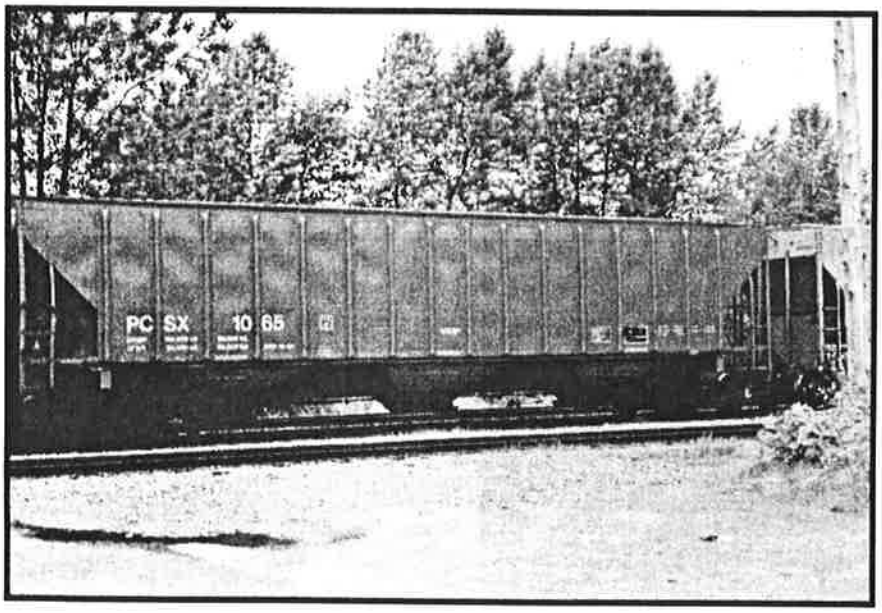


Photo Six
PCSX 1065
North Vancouver BC
June 1994
Jim Moore Photo

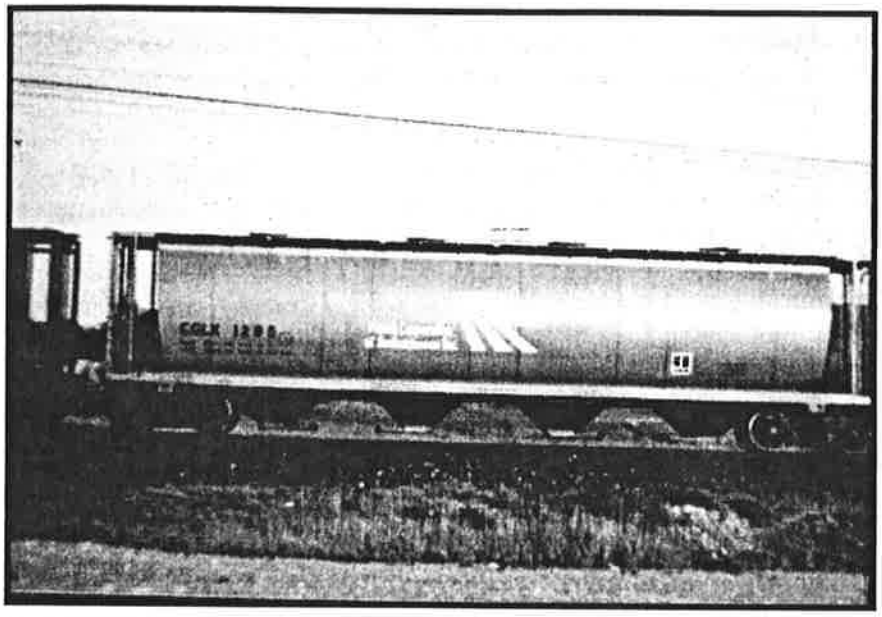


Photo Seven
CGLX 1295
Carpreol ON
June 1993
F. John Perry Photo

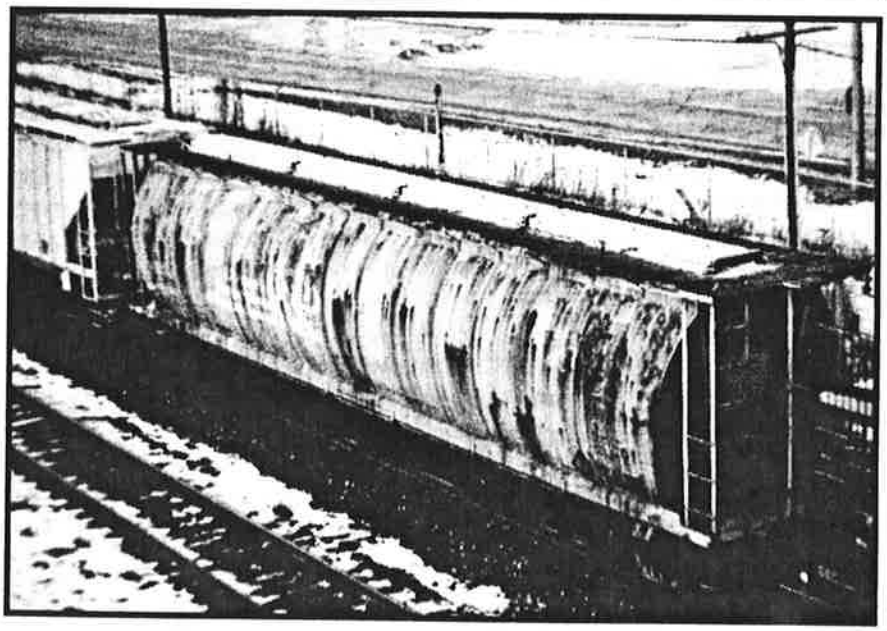


Photo Eight
UNPX 120286
London ON
January 1992
F. John Perry Photo

Articles Needed!

Your support and assistance are needed to ensure the continued success of *The Cariboo*. If you presently preparing an article for use in our newsletter, please complete it by the agreed upon deadline. If you have yet to help out with the preparation of an article, please do not hesitate any longer. We need your help. Features can range from introductory to complex. Without an on-going supply of material, we won't be able to continue *The Cariboo*!

North Vancouver Yard

Jim Moore

In this issue, we present the first in the series of installments which will detail both the facilities of BC Rail and its customers (e.g., on-line industries). This installment will focus upon what has been the railway's primary origin and destination point since 1956, North Vancouver.

The basis for this examination is: 1) the railway's *Condensed Profile #3* (1985), 2) the *Condensed Profile #4A* (1990) 3) the *International Port Handbook*, and 4) extensive field observations conducted during 1993 and 1994. Contributing to this effort were Andy Barber, David Barone, Laszlo Dora, Eric L. Johnson, Dave Nickerson, and Ron Tuff.

As can be readily noted, the lion's share of the North Vancouver acreage is taken up by railway (company) related facilities. Located at Mile 0, east of the yard itself, is the BC Rail Centre (Point A)(see pages 15-17). Built in 1983, this structure houses virtually all of the Railway's administrative and management staff. From a historical perspective, it is fitting that the Centre sits near the site of the PGE's original passenger depot which once sat at the foot of Chesterfield Avenue.

To the west is Berwick Avenue and the Canadian National interchange point, where cars from/to CN's nearby Lynn Creek terminal are exchanged. Five tracks and a crossover are in place today.

The BC Rail mainline crosses Mosquito Creek via a 74-foot long timber pile trestle which was originally built in 1955. Three adjacent trestles are for yard tracks. The siding (B) which once served the nearby Pacific Marine Training Institute was removed sometime after 1985.

Next we come to a group of three businesses. Forsyth Equipment Rentals (C), which sits at the base of Fell Avenue, is not an on-line customer. Forsyth rents construction equipment such as cement mixers, material trailers, etc. The equipment yard is surrounded by a high wooden fence. The switch and tracks which once were located here were removed post-1990. (Ed Note: The small refinery, storage tanks, and wharf of the Vancouver Oil Company once occupied the site located at the foot of Fell Street. Crude oil from California arrived via ship weekly. Here it was off-loaded into railway tank cars for delivery to retail outlets in the interior of the province. The company ceased to do retail business in British Columbia in 1972.) Beaver Lumber (D), and neighbor Hollyburn Lumber (E), are both retail lumber operations. Neither are on-line customers, and both receive their deliveries via truck.

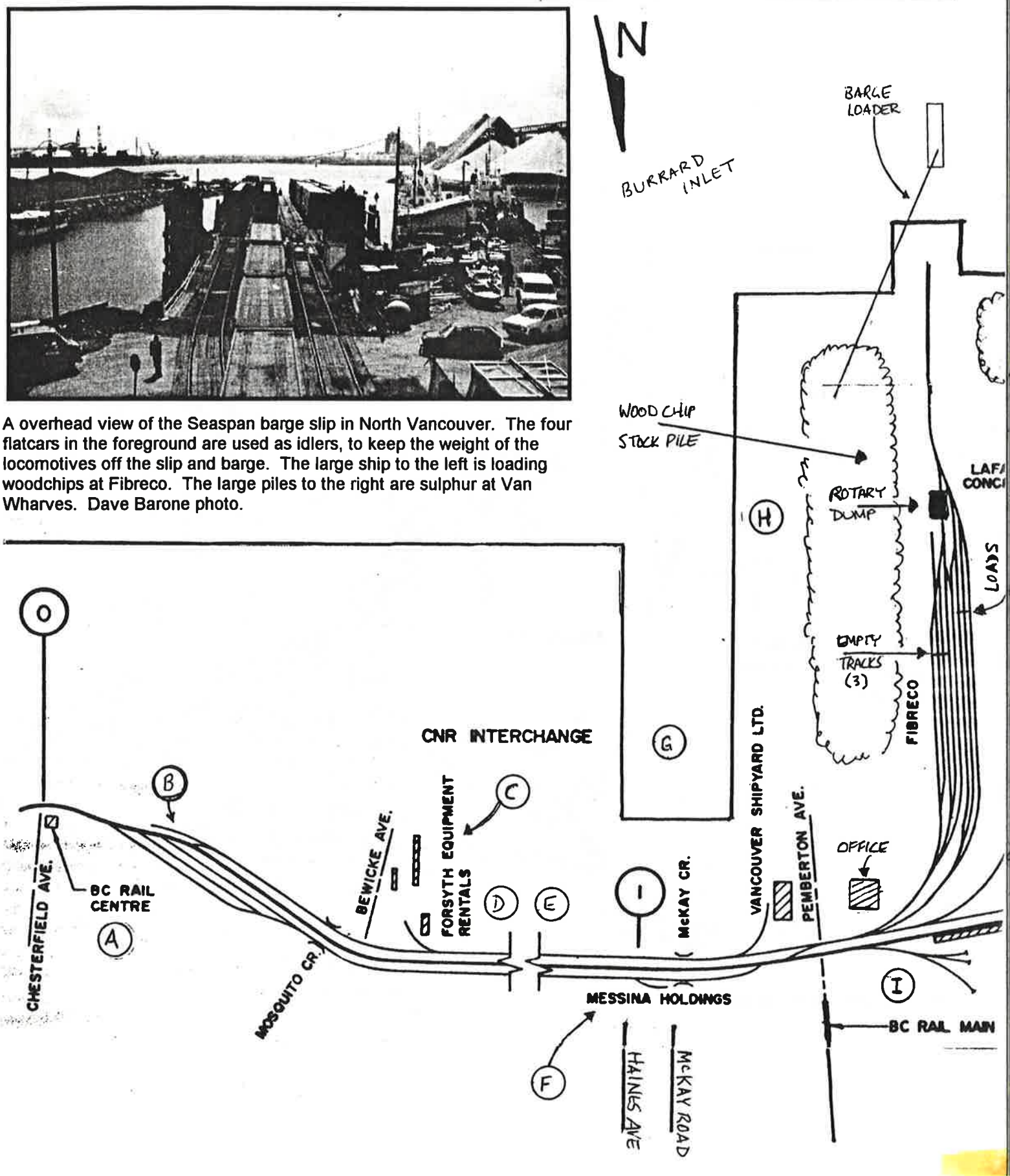
The nature of Messina Holdings' (F) business is not presently known. However, five small structures are located between Haines and McKay to the north of BC Rail's tracks. Although the indicated switch was removed sometime after 1990, some of the spur remains in place.

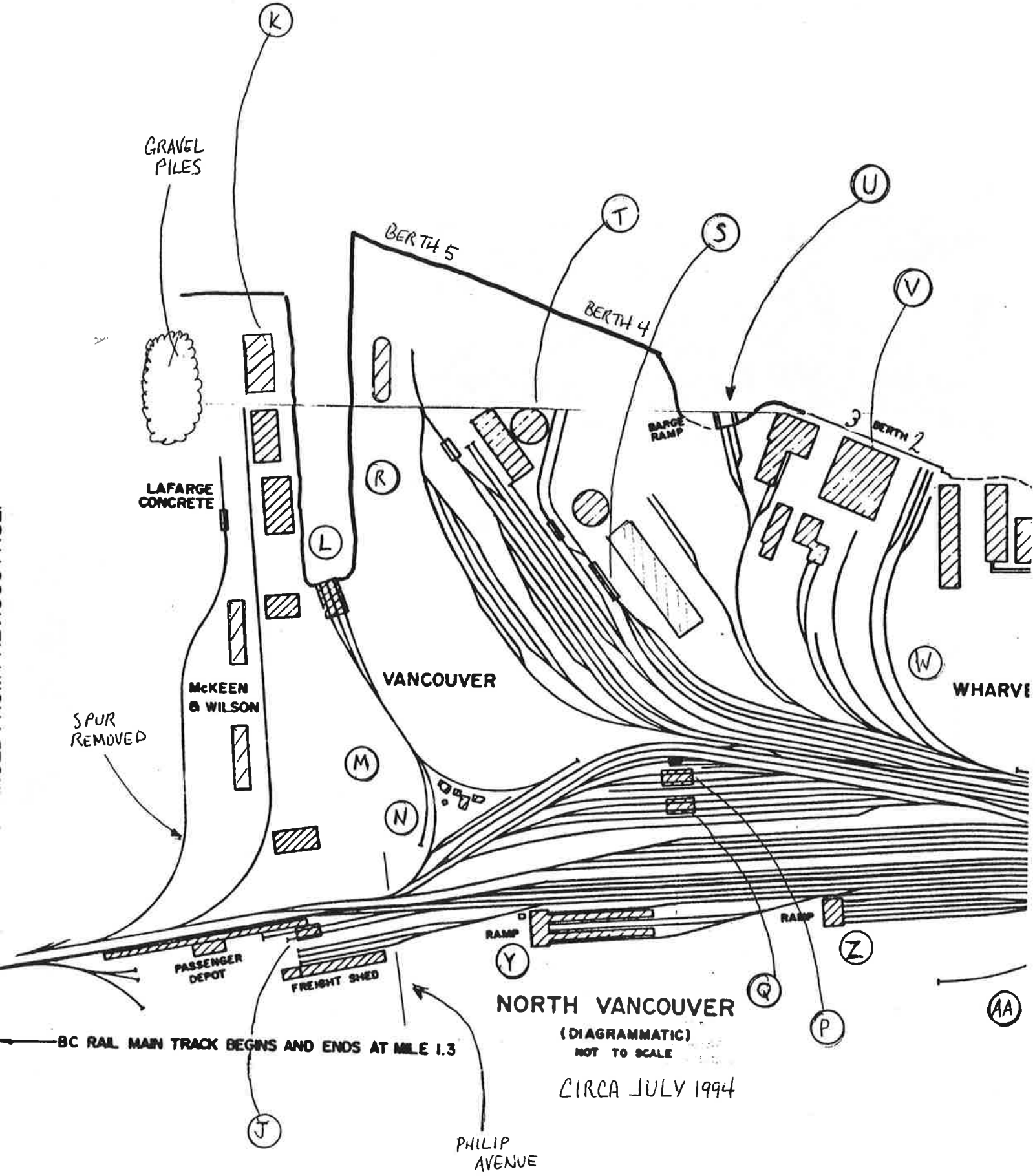
The railway's crossing of McKay Creek (mile 0.68) was rebuilt in late 1993, when four 1822-ton cube-shaped cement sections were installed. Formerly, the mainline crossed this point via a 44-foot long timber pile trestle, which was built in 1955. Three adjacent trestles were used for yard tracks.

The switch and tracks that once led into the large (40 acre) drydock and berthing facility at Vancouver Shipyards (G) are also gone. Here one can observe a wide assortment of ocean-going vessels --up to 15 vessels simultaneously--undergoing repair. Along Pemberton Avenue can be found the home of the active Seaspan International (H) operation. A great variety of tugs and barges may be noted. Among the activities undertaken by Seaspan is a daily trailer-barge service to Vancouver Island.

The operations of Fibreco Pulp and Export is a very significant BC Rail on-line customer. Fibreco is jointly owed by several of the larger lumber mills within the province. The facility is switched twice each weekday: once before 0630 hour and again between 1200 and 1300 hours. The morning job is comprised of 60 wood chip hoppers, while 30 loads make up the mid-day run. Cars are delivered to Fibreco in cuts of 15. The chips are unloaded via a rotary car dumper. (The original rotary car dumper was built in early 1963.) Following dumping, the chips are transferred to a long stockpile via an overhead conveyor system. Loaded cars enter on the west side of the complex, while empties are positioned on the east side. The wood chips are loaded onto either Seaspan barges for transport to paper mills on the lower mainland or Vancouver Island, or

A overhead view of the Seaspan barge slip in North Vancouver. The four flatcars in the foreground are used as idlers, to keep the weight of the locomotives off the slip and barge. The large ship to the left is loading woodchips at Fibreco. The large piles to the right are sulphur at Van Wharves. Dave Barone photo.




K
GRAVEL PILES
BERTH 5
T
S
U
V
BERTH 4
BARGE RAMP
3
BERTH 2
LAFARGE CONCRETE
R
L
McKEEN & WILSON
VANCOUVER
W
WHARVE
SPUR REMOVED
M
N
RAMP
RAMP
Z
Y
PASSENGER DEPOT
FREIGHT SHED
Q
P
AA
NORTH VANCOUVER
(DIAGRAMMATIC)
NOT TO SCALE
BC RAIL MAIN TRACK BEGINS AND ENDS AT MILE 1.3
CIRCA JULY 1994
J
PHILIP AVENUE

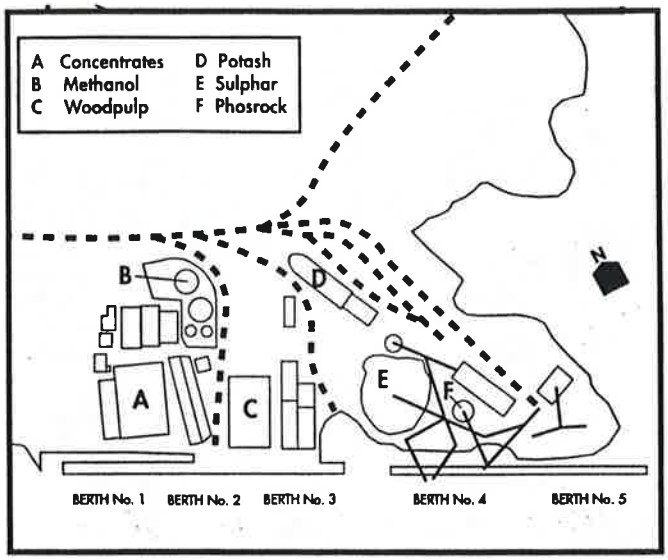


Diagram of Vancouver Wharves.
Courtesy of *International Port Handbook*, 1991.

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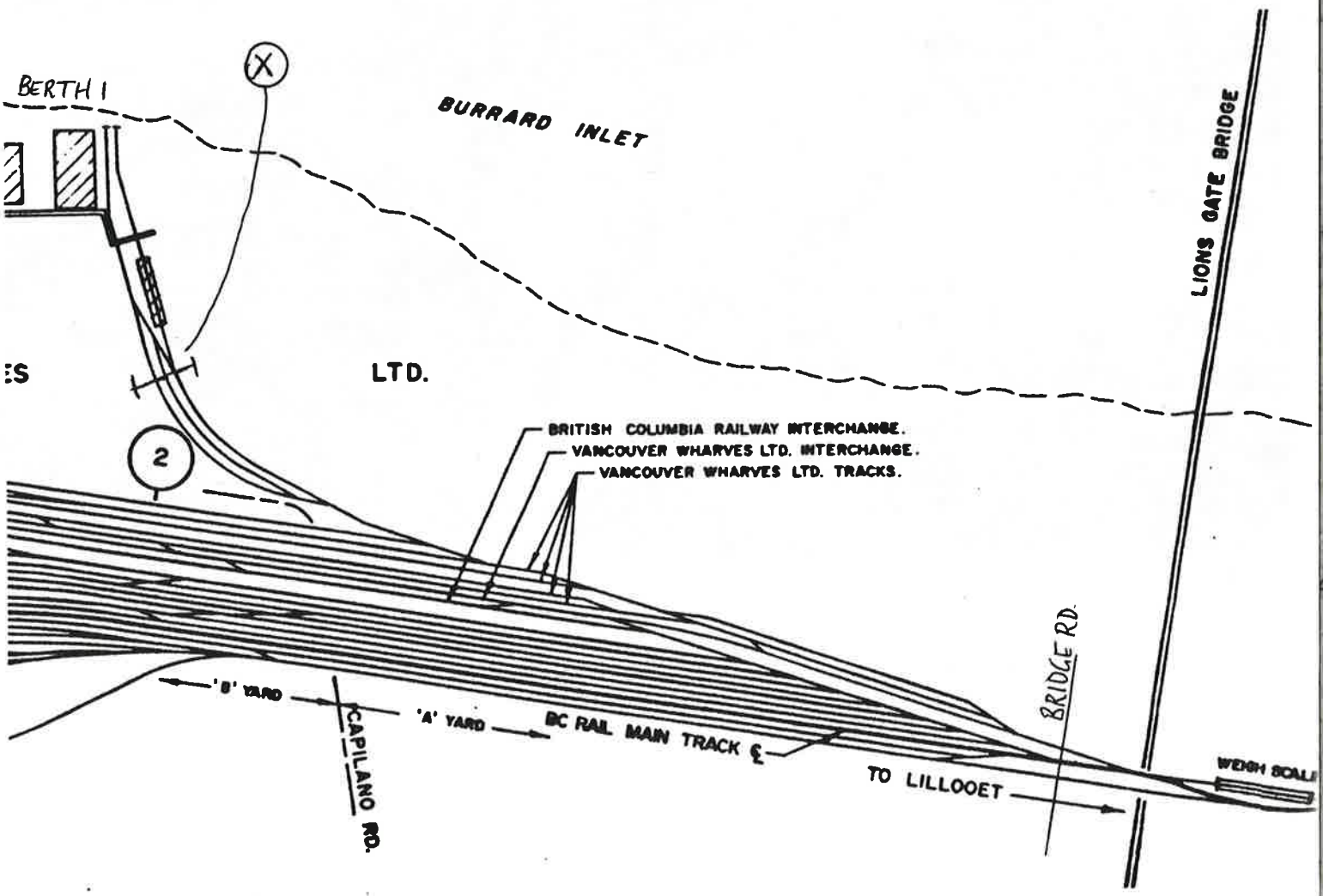
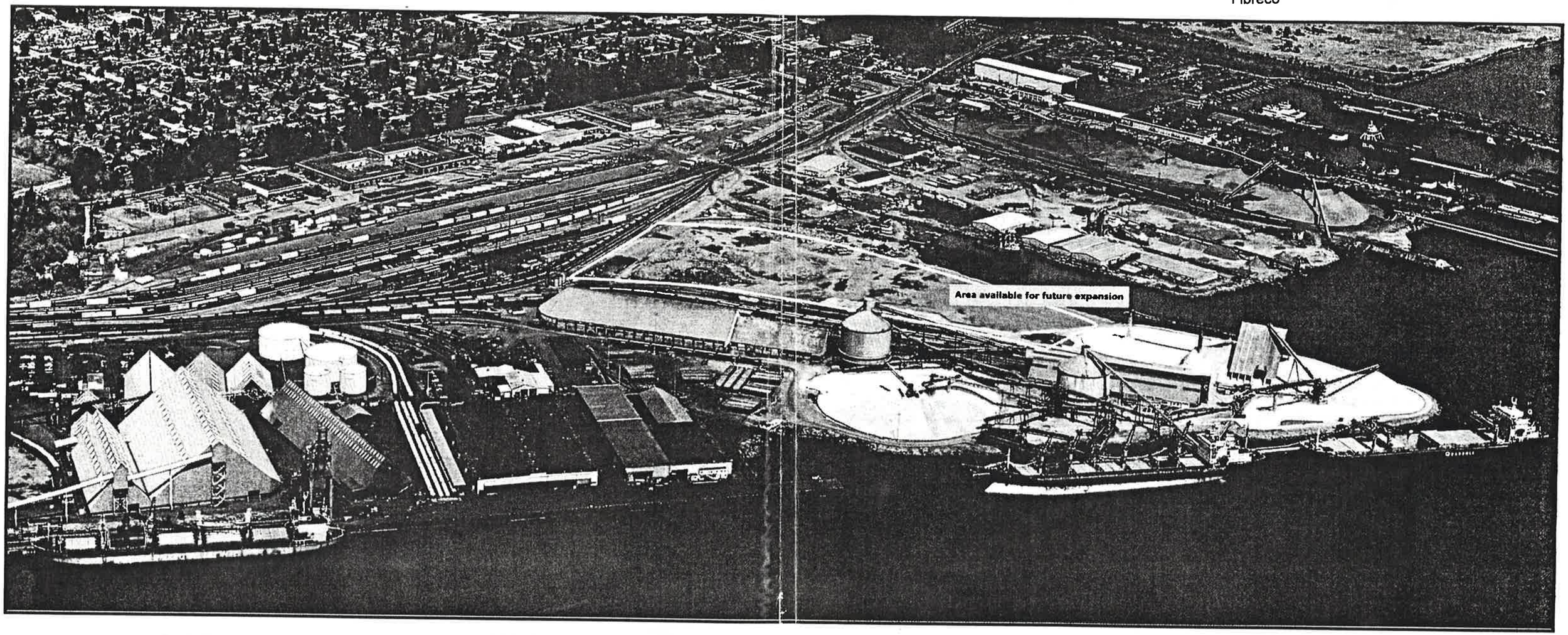


BCR North Vancouver Yard

Fibreco



Berth One

Concentrates

Berths Two and Three

Woodpulp

Berths Four and Five

Sulphur, Potash, Phosrock

Vancouver Wharves complex. Photo courtesy of Vancouver Wharves Ltd.

aboard large ocean-going vessels for export to Far East markets. While BCR wood chip cars are certainly in the majority, many Canadian National chip cars may also be noted. These cars are delivered via the nearby CN interchange.

BC Rail's North Vancouver passenger depot sits on the north side of the mainline, just west of Pemberton Avenue. From this single-story brick and stucco structure, both the daily *Cariboo Dayliner* and seasonal Royal Hudson steam excursions operate. The station sign lists the elevation as 11.23 feet. Until the late 1980s, an array of three spurs (I) could be found just east of the depot. Today, only one spur remains. Along this track, a pair of the railway's 2100-series covered hoppers can be seen. These hoppers, which are classified as OCS, are loaded with sand in North Vancouver. The sand is shipped to the Prince George and Chetwynd locomotive shops for use in the railway's motive power.

Off the northwest corner of the depot are two more buildings of interest. The first is the North Vancouver Steam Shop where the Royal Hudson is serviced. This single-story building of corrugated siding features twin stalls. BC Rail's two steam locomotives, fuel tenders and excursion passenger cars are kept here. A concrete loading platform separates the Royal Hudson shed from the neighboring North Vancouver freight house. Located east of Philip Avenue, a wide assortment of trucks, trailers, and delivery vans may be seen parked along the building's north side. Behind the light tan wooden freight shed are three tracks. The first two are often filled with 50-foot boxcars. The southernmost track is used to store the *Summit* passenger equipment. (Ed Note: *Summit* service consists of four private cars available for private charter. One of the cars, *Northern Summit*, was once the private railcar of former BC Premier W.A.C. Bennett.)

Crossing south across the yard, one finds a group of small-sized buildings. Known collectively as Waterfront Business Park, these include Lions Gate Mini-Storage, the Ministry of Transport, and Roberge Trucking. None of these businesses is an on-line customer. McKeen & Wilson is the landlord for this small (approximately 40 acre) business park. Hollyburn Lumber also maintains a storage yard here.

Located at the end of the former spur is Lafarge Concrete. The yard is dominated by a combination of piles of aggregate and concrete silos. Concrete leaves the plant through two modes: either by truck or via an overhead conveyor system to nearby barges. When the spur was still serviceable (pre-1990), groups of 2200-series covered hoppers would often be seen here. All related trackage has been removed. Numerous cement mixer trucks are parked nearby.

Across from LaFarge is Northgate Warehousing & Distributing (K), an important on-line customer. Northgate is a very active center for the trans-shipment of a variety of packaged commodities including pulp, paper, and finished lumber. Several BC Rail 50-foot boxcars (combination door and sliding door) are usually spotted on the track which runs alongside the three rectangular-shaped, single-story, grey-coloured corrugated metal buildings. The surrounding yard is a flurry of truck and trailer activity. Several TOFC units for shippers such as Hanjin can be seen stored nearby. A small dock sits on the inlet behind the Northgate buildings.

The Seaspan barge slip (L), which provides the railway's connection with the Burlington Northern, sits on a small inlet adjacent to the Northgate complex. Completed in mid-1963, this facility is utilized by various railway car barges ranging in capacity from 9-31 railcars. Frequently, the trainships *Seaspan Greg* and *Seaspan Doris* (25 railcar capacity each) will tie up here. A BC Rail CRS-18--slug set is used to move rail cars on to/off of the barge. To ensure that the locomotive never crosses onto the vessels, sets of idler cars are employed.

Sailings to Seattle occur every other day, usually departing by 1400 hours. The vessels arrive the following day about 1100 hours at Terminal 2 (Alaska Hydro-Train & North Star Forwarding), which is jointly owned by Seaspan International and Crowley Maritime. The waterside portion of Terminal 2 is one of two rail-car barge facilities on the North Pacific Coast capable of servicing 400 x 100-foot double-deck rail and trailer barges under all tidal conditions.

The building to the east of the slip is the former ferry administration office. Constructed of grey clapboard siding, this is now home to an electrical contracting business. (Ed Note: In 1967, Island Tug & Barge of Victoria, along with Foss Launch Tug and Barge of Seattle, operated five 21-boxcar rail barges on a 24-hour basis with PGE-generated traffic from this location. Interchange was made with the Great Northern, Milwaukee Road, Northern Pacific, and Spokane, Portland & Seattle.)

The present day slip was used into the mid-1980s to interchange traffic with the Burlington Northern via cross-harbour travel to the former Great Northern slip located west of the Ballantyne cruise ship terminal. Today, interchange is regularly made via the CN from BN's New Westminster yard. Occasional sailings to pulp mills located on Howe Sound (e.g. Woodfibre) also depart from the Seaspan slip.

Directly north of the barge slip is Sanderson Concrete (M). This is the former L & K Lumber site. The size of this land parcel has grown over the past fifteen years, as additional material was reclaimed from the nearby waters. Sanderson is not an on-line customer, and material arrives via truck.

(Ed Note: L & K Lumber, which operated a sawmill at the foot of Philip Avenue, ceased operating circa 1970. In December 1983, the company went bankrupt and passed into receivership. Finally, the property was put up for auction in late 1984. L & K's operation consisted of several buildings including wood chip barge loading facilities. During the mill's heyday, the adjacent water inlet reached much further northward than it does today.)

A variety of maintenance-of-way spurs can be found near the base of the wye. Several small sheds are located within a fenced-in compound. South of the shop trackage is the new North Vancouver yard office (N). This building, which opened in January 1995, houses Operations, Engineering, and Intermodal yard personnel. The yard offices features a 40-foot observation deck.

In the center of the yard is the North Vancouver Diesel Shop (P), which was built in 1960. Scale drawings of this corrugated metal building appear in Issue 7 (January 1992). The Diesel Shop handles minor repairs to BC Rail's motive power fleet, maintains the three switcher-slug sets, and performs all Budd car maintenance. Usually, the RDCs are parked to the east of the Diesel Shop. On the western side sits a large fueling facility. Fuel storage tanks are located across the tracks, to the south of the Shop.

Directly to the north of the Diesel Shop is the site once occupied by the North Vancouver Car Shop (Q). Built in 1958, the car shop was an open-air structure with a corrugated metal roof and a concrete base. This shop held up to four railcars at a time. Torn down in late 1990, the site is now occupied by tracks A-13 through A-15. The car shop was replaced by a mobile yard repair program.

Traveling west, we find the Vancouver Wharves Ltd., a North Vancouver-based cargo terminal. Opened in mid-1960, Vancouver Wharves originally consisted of 40 acres of reclaimed land and a single 700-foot long berth. BC Rail purchased controlling interest in Vancouver Wharves in 1993. A longtime neighbor of BC Rail, the former Samuel Williams & Sons Ltd. is the largest multi-product deep-sea terminal on the West Coast. Today's operation is situated on 111 acres along the shore of Burrard Inlet, and includes five berths, a rail barge slip, and approximately 1000 meters of wharf frontage. A company-owned switching yard is capable of holding 500 railcars.

To keep pace with the growing needs of its customers, significant alterations in Vancouver Wharves' physical plant have occurred during the past ten years. New warehouses have been constructed, while older buildings have been razed. Associated trackage has been has also been altered. Vancouver Wharves handles approximately 200 rail cars each day, including deliveries of potash, sulphur, copper, and zinc.

Along the westernmost trackage can be found bright yellow piles of sulphur (R). Gondolas decorated for Procor and Sultran carry large quantities of pelletized sulphur from Fort Nelson and Pinesul Mines (Petrosul International near Hasler Flat, south of Chetwynd) for export. (Ed Note: See Issue 6/October 1991 for an in-depth discussion of these sulphur cars.) Sulphur is unloaded via a rotary car dumper, which is then stockpiled pending export. Eventually, the material will be transported via an overhead conveyor system to ocean-going vessels. Ships such as the *New Duquesa* (Panama) have been sighted being loaded with concentrates at Berths 4 and 5.

Next over is trackage associated with potash and phosphate (phosrock). Potash, which comes from underground mines in Saskatchewan, arrives via CN and CP. The commodity is carried in covered and cylindrical hoppers bearing the markings of CN, CP, Canpotex, and Potacan, among others. (Ed Note: See related article this issue.) The potash is unloaded through a

bottom-door railcar dumper system. Railcars are switched into a low-lying, semi-enclosed structure (S), at which time the concentrate is emptied into a below ground-level pit. From here it is transported via conveyor belts to large, blue-coloured metal silos (T). The silos were built in 1966, and are leased by International Mineral & Chemicals and Texas Gulf among others. When ready for export, it is transported to ships berthed nearby.

To the north of the potash silos, is a rectangular-shaped, corrugated metal storage building. Built in 1969, this is a bagged storage workhouse. On a track alongside, a group of twenty 50-foot outside braced boxcars sits empty. These cars, which bear the markings of Alabama State Docks--Port of Mobile and the St. Lawrence Railway, will be used to transport the bagged phosphate. Prior to the construction of the workhouse, this area was used for open-air lumber storage.

To the west is an area for trailer staging and parking. Adjacent to this is the Vancouver Wharves barge slip (U), which was rebuilt in the autumn of 1993. This slip, while serviceable, is rarely used. Designed to accommodate both conventional railcar barges and roll-on/roll-off barges, this facility is BC Rail's interchange with the Union Pacific. (Ed Note: Ironically, any potential utilization of this slip was diminished as a result of its 1993 rebuilding. Due to its new configuration, the type/number of barges capable of using this facility were reduced. The last known usage occurred during the BCR strike of 1993.)

A group of wood product storage buildings (V), completed in the early 1970s, is surrounded by 50' BC Rail boxcars. The largest structure is a 29,000 square foot pulp storage warehouse. The pulp, which arrives via rail from interior mills, is transferred to nearby ships for export. Numerous trailers can be seen parked nearby. Along adjacent Berths 2 and 3, ships such as the *Star Drivanger* (Hong Kong) have been sighted being loaded with paper, pulp, and forest products.

Long strings of modern-design tank cars bearing CGTX, NADX, and UTLX markings can be seen parked along the tracks directly to the west of the wood product storage buildings. Nearby are storage tanks (W) for the methanol which arrives from Methanex in Medicine Hat, Alberta.

Adjacent to Berth 1 is the lead and zinc unloading facility. Heavy gondola traffic (Burlington Northern and CP Rail) can be noted here. Concentrate from Alaska's Red Dog Mine arrives via ship. From here it is loaded into gondolas for shipment to the Cominco smelter near Trail, B.C. Often, due to a shortage of gondolas, BN wood chip hoppers are used to transport the concentrate. These cars filled to a 12 inch maximum height.

Next is the area where copper concentrate arrives from several mines including on-line customer Gibraltar Mines (mile 345). Gondolas are positioned by diesels such as Vancouver Wharves' S-13 #827 (ex BCR #503, acquired in 1992) under a traveling 2.5-ton overhead crane (X), which is used to remove the fiberglass covers. Then a grab bucket unloader crane removes the copper concentrate from the cars. It is stockpiled nearby for loading onto ships bound for Pacific Rim ports (mainly Japan). (Ed Note: The equipment used by Vancouver Wharves has varied over the years. Initially, two switchers of English heritage were imported. Painted blue, these diesels were affectionately referred to as "Grunt" and "Groan". During the 1980s, the equipment used included Alco S-6s, Alco S-3s and S-4s, and a General Electric 80-ton industrial switcher.)

Here is a summary of the equipment which can be found in conjunction with the five berths at Vancouver Wharves:

- Berth 1: concentrate railcar unloader, grab bucket unloader crane, storage warehouses, conveying systems, traveling shiploader, methanol receiving/storage/shipping system, stainless steel pipeline to accommodate spot liquids from rail to vessel.

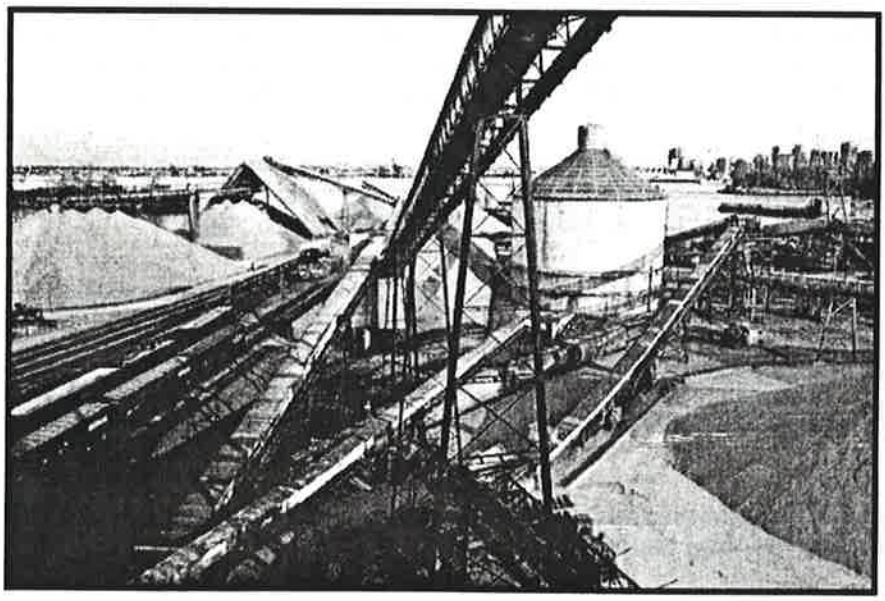
- Berths 2 and 3: breakbulk facility handling pulp/paper/lumber. Equipped with tractors/flatbed trailers and lift-truck fleet serving covered storage on wide apron dock area.

- Berths 4 and 5: rotary railcar dumper, bottom-door railcar dumper. Railcar loadout/scale facility; sulphur, potash, phosrock, and fertilizer shipper/receiving systems. Berth 4 has twin-quadrant retractable shiploaders and the phosphate rock receiving system. Berth 5 has a traveling shiploader which is trimmer equipped.

The north side of North Vancouver Yard is dominated by the railway's intermodal complex (Y). Opened in August 1990, this new facility sits on land once occupied by the railway's Radio Telcom building. This area is a flurry of traffic, illustrating the growing interchange between rail and road. Trailers decorated for companies such as COSCO, K Line, Labatt's, Maersk, and Safeway can be seen here. These will be delivered to ramps located at Quesnel, Prince George, Ft. St. John, and Dawson Creek. The intermodal yard is asphalt covered, and features a weigh scale, fueling dock (gas, diesel, propane), and Caterpillar V1100 traveling crane. The crane serves to lift trailers on to/off of flat cars.

Located to the west is the site once occupied by the old TOFC facility (Z). Trailers once loaded here circus-style. In late 1989, the truck ramps were removed and all associated trackage was modified to join up with (existing) trackage to the east. A large paved yard for TOFC and lumber truck parking was created due north of the former ramp area. A spur was installed here (circa 1990), serving as the lead to a new lumber unloading complex (AA). Flatbed trailers, stake trucks, and boxcars labeled for NOKL and MSDR can be seen in great numbers. An open-air reload shed for the transfer of wood products sits nearby.

Trains are received and classified on tracks on the north side of the yard, while tracks on the south side are used for storage. As the mainline crosses Bridge Street, beneath Lions Gate Bridge, the site of the former weigh in-motion scale is passed. The scale was relocated in early 1992 to a point near the center of the yard. The trackage in the area was revised significantly and now features five yard leads. In addition, a spur on the southern side is used for maintenance-of-way equipment parking. From this point, its just 36.5 miles to Squamish.



Inside Vancouver Wharves, this photograph show the intracacy of the concentrate unloading conveyor systems. Left are the open-air sulphur storage piles. Right of center is one of the potash storage silos. Reprinted from the *Port of Vancouver*, by Jim Lyons & Barbara Duggan. Photo courtesy of Laszlo Dora.

Our next installment in this occasional series will examine the facilities of BC Rail and its customers at Williams Lake. Readers are encouraged to submit information pertaining to this subject, which may be incorporated into the feature. Additionally, we hope to include scale drawings of several of the railway's buildings in Williams Lake. The nature of the structures ranges from basic to complex. At present, BCRH&TS member Trevor Mills is preparing a set of drawings for the Williams Lake depot. If you can assist with this project, please contact Jim Moore as soon as possible.

PGE/BCR Insulated-Heated Box Cars
Series 8000-8011 and 8021-8030

John Bruce

Insulated and heated plug-door box cars (mechanical designation XMIH) were briefly a common car type in Canada in the late 1950s and early 1960s. The use of permanent, underslung car heaters was almost exclusively a Canadian phenomenon. In the USA, with only limited exceptions, portable heaters were installed in box and refrigerator cars when a cargo needed to be kept from freezing. Among the few fleets of box cars with permanent heaters in the USA was the New Haven's, which had their heaters removed due to problems even before the PGE cars were ordered.

The cargoes that needed to be kept from freezing were primarily food products with high water content. This includes fruits and vegetables, which were often shipped under a layer of crushed ice to keep them cool in the summer, but which would need to be kept from freezing in the winter. It could also include beer, which must be shipped in a limited temperature range and kept from freezing, or soft drinks. However, no specific information on the actual cargo carried by BCR's XMIH cars, or typical shippers and consignees, has come to light. The small number of cars in the PGE/BCR fleet is also puzzling. The help of readers who may have this information would be most welcome.

8000-8011 Series

PGE bought the first (8000-8011) series of XMIH cars in November, 1961, from the Dominion Steel and Coal Corp. (DOSCO) of Trenton, NS. DOSCO was the corporate name being used at the time by Eastern Car Company (ECC), a well-known carbuilder. Two previous published references to these cars have cited National Steel Car Company (NSC) as the builder, but the PGE order is listed in the DOSCO/ECC records, and PGE/BCR records confirm DOSCO/ECC as the builder.

It appears that the factor influencing previous identification of these cars as NSC-built is the design of the ends. A number of "freightcarology" articles in the model railroad press have erroneously identified ends with rectangular, tapered corrugations as proprietary only to NSC, and some sources of aftermarket parts have identified these ends as *"NSC"* ends.

However, both ECC and the New York Central's Despatch Shops also built box cars with the same type of rectangular, tapered corrugations on the ends as NSC. Despite the recent coverage of freight car details in the model press, we still know less than we think, and the help of readers who may have information on the actual source of NSC, ECC, and New York Central Despatch ends would be most welcome. BCRH&TS member Richard Yaremko confirms that the spotting features for an Eastern Car box car are the rectangular tapered corrugations on the ends and a diagonal panel roof, and these are present on the PGE 8000-8011 cars.

The first series had an inside length of 40 feet 6 inches, with plug doors eight feet wide. They had permanent alcohol heaters mounted below the underframe, and were equipped with roller bearing trucks.

Paint and Lettering

The 8000-8011 cars were delivered in a variation of the PGE block-capital letters, stacked road name box car scheme. The road name, with the as-delivered scheme, appears to have been larger on these cars than on standard box cars. All or most cars were subsequently repainted in the PGE map scheme on an oxide red car. At least six cars were repainted in the BCR dogwood scheme on a light green car. In all cases, the 8000-8011 cars appear to have carried INSULATED-HEATED or INSULATED BOX lettering, as well as special-instruction lettering with the dogwood scheme. Examples of this lettering are shown in the photos.

8021-8030 Series

The 8021-8030 cars were also purchased by PGE. This group was built by NSC, in Hamilton, Ontario, in November, 1969. Reflecting changes in freight car design since the first group, they were 50-foot, outside post cars, built without roofwalks. They carried the same type of NSC/ECC/NYC ends as the first group, but the NSC spotting feature was the combination of

these ends with a roof with elongated bow-tie shaped stiffening panels, similar to those used on Pullman-Standard cars, rather than the diagonal panels used on ECC cars.

The 8021-8030 series had an inside length of 49 feet 5 1/4 inches, with plug doors ten feet six inches wide. They had an alcohol heater mounted below the underframe and had roller bearing trucks.

Paint and Lettering

The second series had as its most distinctive feature (other than the heater) a light yellow-orange body color that was carried onto the truck sideframes (but not the roof or wheels, which were left natural metal). The lettering was a variation of the PGE map scheme in black with an INSULATED HEATED designation on the left side. The Official Railway Equipment Register (ORER) lists only one car --8030-- as ever carrying BCOL initials. Most of the cars appear to have retained the as-delivered paint and lettering throughout their service lives.

Service History

The chart below shows the quantities of each class of PGE/BCR XMIH cars as reflected in available issues of the ORER.

Date	Quantity	Quantity	
	8000-8011	8021-8030	
As delv'd	12	10	
Oct-64	11		
Apr-68	11		
Apr-73	11	10	
Jan-74	11	10	
Jun-76	11	10	
Jul-80	11	8	
Oct-81	11	8	
Apr-86	6 and 4	1 and 7	PGE/BCR
Oct-90		1 and 7	PGE/BCR

From these entries, it appears that one of the first series disappeared early, presumably in a fire or wreck, and the rest of the first series was withdrawn from revenue service between 1986 and 1990. Some cars were sold for scrap in 1986-7 and barged to Tacoma, Washington. Photos show one of the first series cars renumbered 993068 and used apparently for storage in Lillooet as of June 1994. All remaining cars of this series on the property are in company service.

Some cars of the second series have remained in revenue service and have been photographed on the Takla Sub as recently as 1994. Others appear to be used in company service or storage (i.e. 8024 and 8026) at Squamish as of 1994.

Modeling Considerations

An accurate model of either series XMIH car would require extensive kitbashing in any scale. The prominent features on the 8000-series are 1) a five-panel riveted side, 2) an 8-foot plug door, 3) a late-design diagonal panel roof of the sort that has a recess between the edge of the roof and the side, 4) the distinctive NSC/ECC/NYC ends, and 5) the underslung heater. In HO scale, no existing kit has more than two of these features together. With riveted five-panel sides, the Front Range plug door, 40-foot boxcar would be a logical starting point. The roof would need to be removed and shortened from a Details West 50-foot boxcar kit and mounted on the Front Range car in a way that would preserve the recess between it and the sides. Kirlin Scale Models' "NSC 3" ends would need to replace the Front Range ends. There is some information on scratchbuilding a

heater, along with a drawing, contained in an article on a similar New Haven car in the January, 1995 Mainline Modeler. For those with less patience, an AHM or Front Range 40-foot plug door box car could simply be repainted. An AHM or

Micro Trains N 40-foot plug door box car could be used in that scale. The ends could be modified to "spoof " NSC/ECC/ NYC ends more closely. Still, the roof would not be correct, and the sides would be welded instead of riveted as found on the prototype.

The 50-foot cars of the 8021-series might be easier. In HO scale, the recent E&C Shops' 50-foot PS-1 boxcar kit might be used for the basic body and roof, with some reshaping of the end ribs to "spoof " the NSC/ECC/NYC ends on the prototype. The sides from the Athearn 50-foot outside post plug door boxcar have the correct number of outside posts and the correct width of the plug doors, and could be used to replace the E&C sides. The Athearn full-height ladder rungs would need to be removed and ventilators added to the sides. In N scale, Con-Cor and MRC have manufactured a car that is equivalent to the Athearn car. It may be possible to splice the sides from this car into a Micro-Trains 50 foot PS-1 to get the same result as in HO. For some, the Athearn or MRC/Con-Cor car could be "close enough".

CDS Lettering Ltd. offers an HO scale dry transfer set which can be used to decorate cars within the 8000-8011 series. This set (#83) features the stacked PGE lettering and all related car markings, printed in white. Modelers could also attempt adaptations of PGE map scheme decals or BC Rail dogwood decals to simulate other 8000-series schemes.

Acknowledgments

The help of the following people is gratefully acknowledged: Andy Barber, David Casdorph, Duane Karam Jr., W.G. McAbee, Jim Moore, Maynard Priest, John Riddell, and Richard Yaremko.

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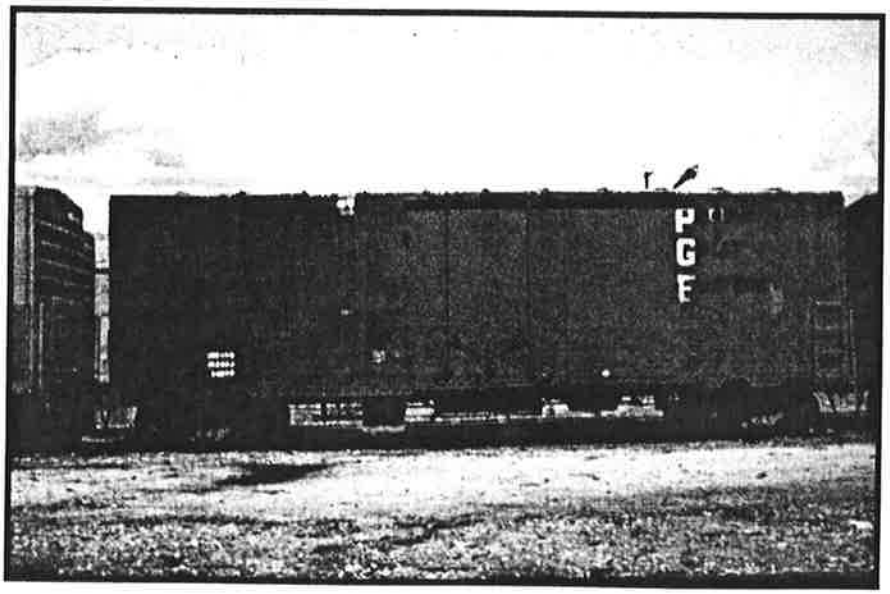
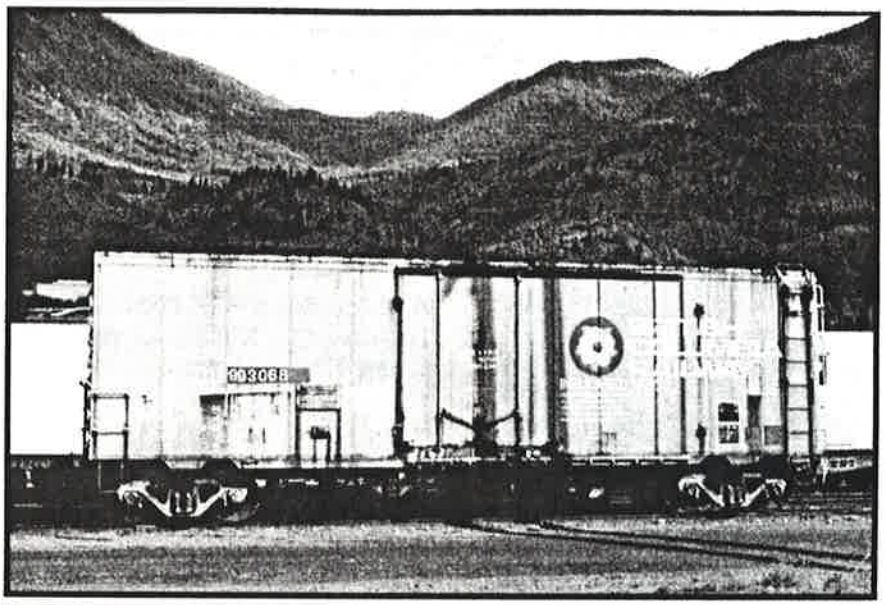
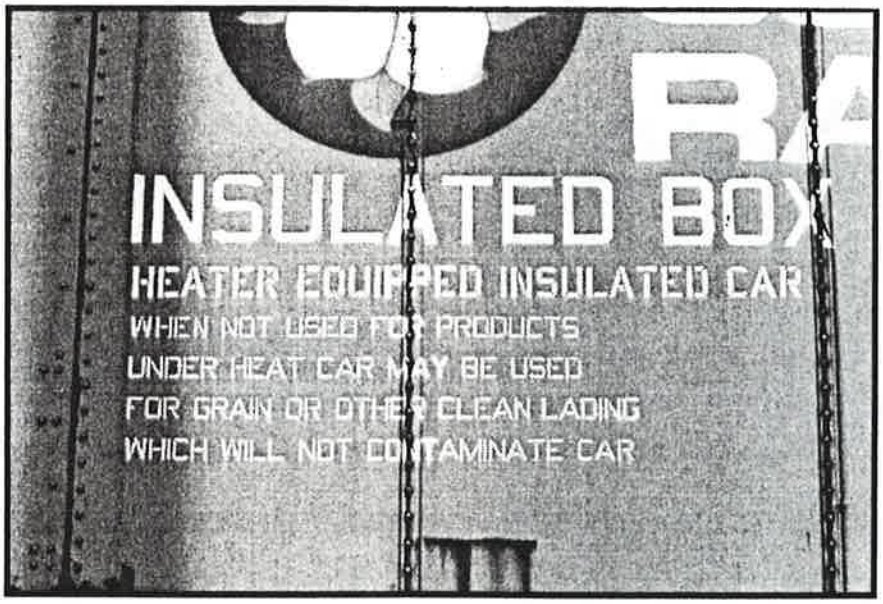


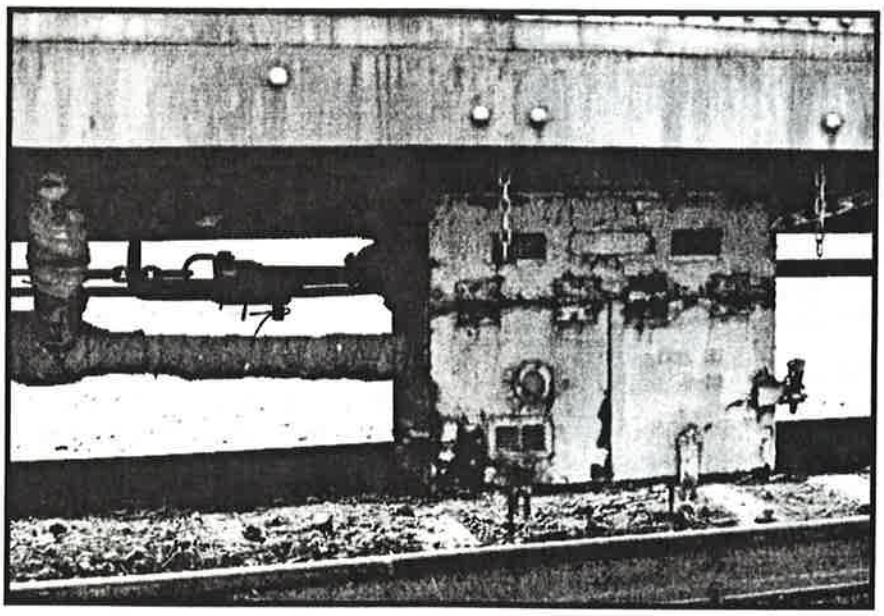
PGE 8000 as seen on July 31, 1977. This is the "as-delivered" boxcar red scheme. All lettering is white. Richard Yaremko photo.



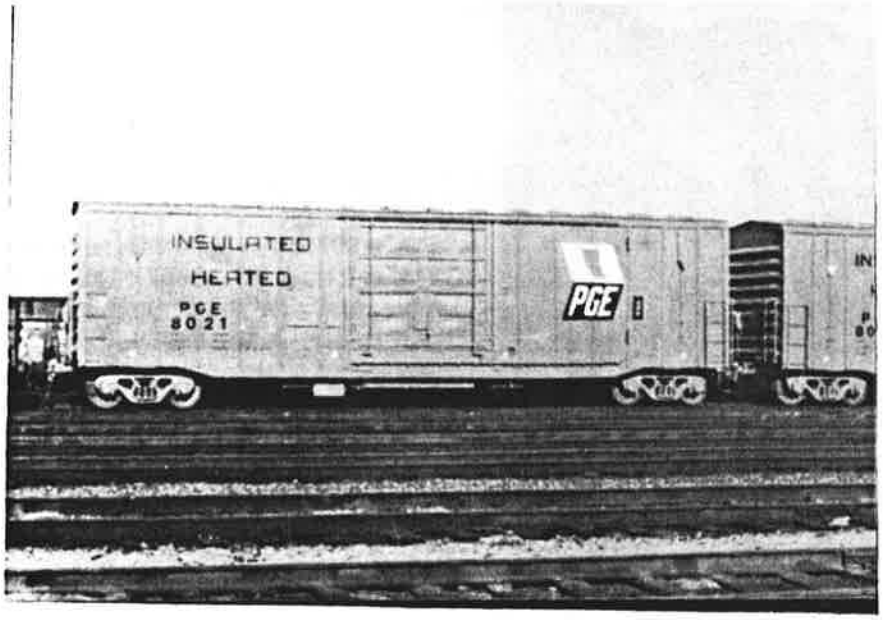
BCOL 993068 in work train service. This is former PGE 8004. The years have weathered the car to a light grey colour. June 1994. Jim Moore photo.



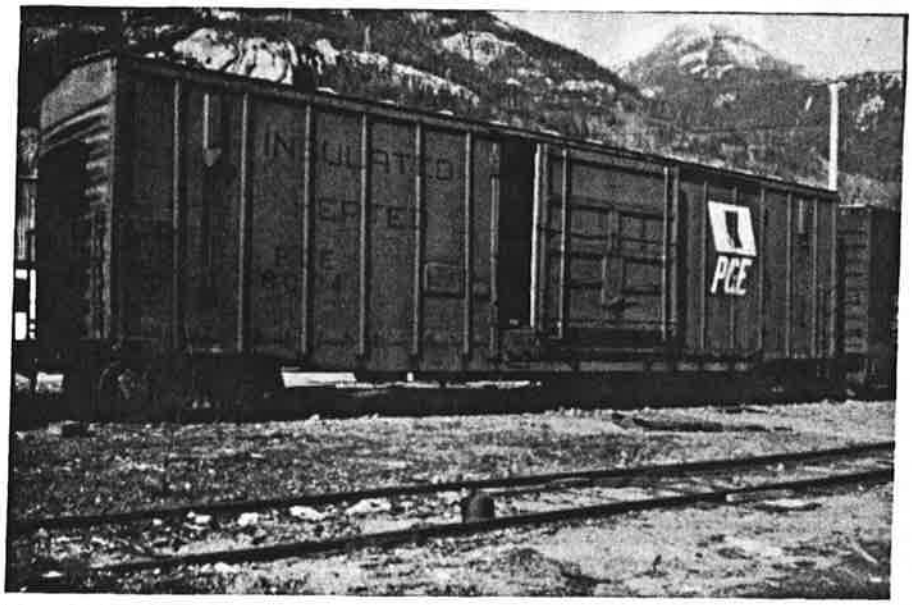
This close-up of 993068's lettering reveals the diversity of cargo carried by these cars during their 25-year careers. Jim Moore photo.



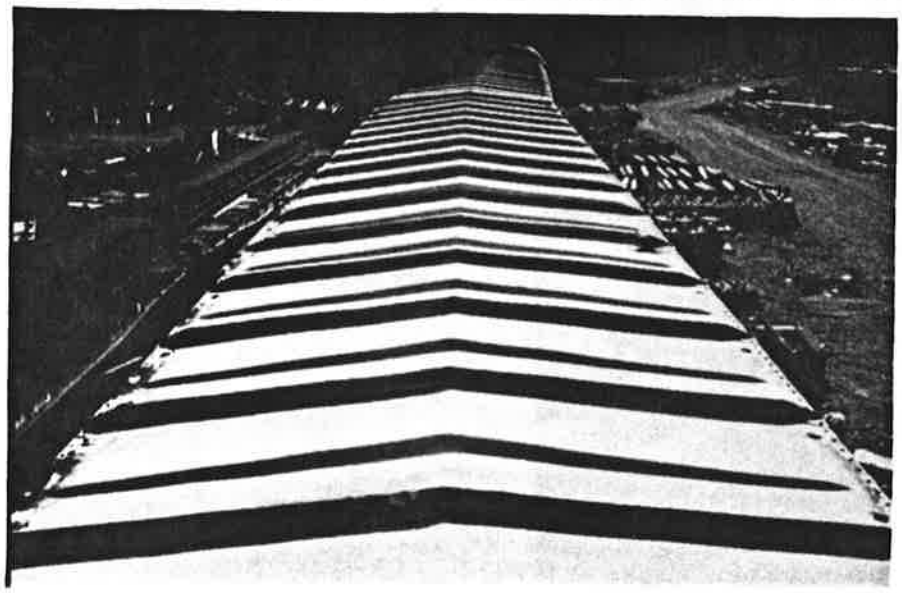
A close-up shot of 993068's alcohol-fueled heater. Jim Moore photo.



A factory-fresh PGE 8021. Shot in Hamilton ON, November 1969. Bryan Sirman photo.



This photo, taken in Squamish in 1993, shows much of the detail of PGE 8024. Andy Barber photo.



A roof shot of the 8021-8030 series cars. Note the elongated bow-tie stiffening panels, similar to those found on P-S designed cars. Andy Barber photo.

Railroad Air Brakes

Ron Tuff

The initial concept for train brakes, developed by George Westinghouse in 1869, was only suitable for relatively short trains since a complete loss of brakes occurred when the train separated and coupler slack action was uncontrollable. Twenty-one years later, the Westinghouse Air Brake Company (WABCo) invented the automatic air brake which "failed safe", improving the uniformity and speed of brake applications. Innovative technology resulted in the AB control valve in 1933, the ABD control valve in 1963, the ABDW control valve in 1976 and finally the ABDX control valve of today. If you were to couple a car with an 1888 triple valve to a car with a ABDX, you would be able to apply and release the brakes on both cars using air pressure in the brake pipe.

There are six main reasons for brakes on trains:

1. To STOP a train. (Service Brake Application)
2. To STOP a train. (Emergency Brake Application)
3. To HOLD the train stopped.
4. To CONTROL train speed for curves, turnouts, signals.
5. To BALANCE train speed on grades.
6. To CONTROL coupler slack.

A service brake application controls the speed of the train or brings it to a stop. An emergency brake application brings the train to a much more rapid stop in an attempt to minimize damage and prevent loss of life. Item six is very crucial to good train handling and the prevention of damage to loads and equipment as each coupler that joins one freight car to the next may have one or two inches of play in it.

When starting a train or when climbing a hill, the train is 'stretched'. As the train goes over the crest of a hill, the back end of the train will, if left alone, run in or 'bunch' on the front end. It is very easy to have the back and front end traveling at very different speeds, usually leading to disaster. By skillful use of the throttle and the brakes, a good engineman will control these 'draft' (stretching) and 'buff' (run-in or bunching) forces and keep them to a minimum.

Freight Car Brakes

The power of the train brake comes from compressed air supplied by the locomotive(s). That energy is stored in the brake cylinder to apply the brake shoes to the tread of the wheels and thus brake the car. What may not be so apparent is that the compressed air is also the medium that carries the signal to every control valve on every car to apply or release the brakes. Since compressed air is the power and the signal, it follows that there must be a brake pipe that runs continuously from the front of the first locomotive to the rear of the very last car. If this pipe is interrupted at any point, then the cars behind this interruption will not receive the signal to apply and release the brakes.

To release the brakes, compressed air from the locomotives is allowed to flow back into the brake pipe and thus raise its pressure. Now the control valve will go to the release position, allowing the air in the brake cylinder to escape and thus removing the force of the shoes from the wheels. At the same time, the control valve will direct brake pipe air to the car reservoirs to recharge them back to the full brake pipe pressure, ready for the next brake application.

The major components that are found on a freight car are the brake pipe, angle cocks & brake hoses, dirt collector & cut out cock, control valve, two compartment reservoir, pressure retainer valve, brake cylinder, brake rigging & slack adjuster and handbrake.

The control valve has three main functions. It applies the brakes on a freight car, it releases the brakes and it allows the charging of the car reservoir. These three functions led to the name "triple valve", and even today some railroad men still

refer to the car control valve as a triple valve although it is much more sophisticated component than the 1888 original. The control valve consists of three portions, the service portion, the emergency portions and the pipe bracket. The pipe bracket is mounted semi-permanently to the freight car and will not likely be removed from the car during it's lifetime. It serves as a mounting bracket for the piping. The service portion's piston moves when the brake pipe pressure is changed to allow brake cylinder air to exhaust and simultaneously allow recharging of the car reservoirs. Attached to the service portion is another valve portion, the 'release valve'. This allows a carman to manually release the brakes on a car when he needs to change the brake shoes or repair the rigging. The emergency portion causes the brakes to apply faster and harder when an emergency brake application is necessary.

The two compartment 'reservoir' consists of the auxiliary reservoir, used for service brake applications and the emergency reservoir, used in conjunction with the auxiliary reservoir for emergency brake applications. Both reservoirs are charged to the same pressure as the brake pipe, however the emergency reservoir is actually a larger capacity than the auxiliary reservoir.

The 'pressure retainer valve' must be set or released by hand. It prevents pressure in the brake cylinder from being released and can be used manually when a train is descending a long grade, however the train must be stopped at the top and bottom of the grade to set and release the retainers.

The 'brake cylinder' is the device that converts the pressure of the air into a force that can be applied to the brake shoes. This is proportional to the reduction in the brake pipe pressure. By means of the brake rigging, consisting of a series of rods and levers, it forces the brake shoes against the tread of the wheel. When the brakes are released, a spring inside the cylinder returns the piston to the released position.

The 'slack adjuster' operates automatically to compensate for shoe and wheel wear. It is double acting, and not only takes up as the shoes and wheels wear, but will let out when new shoes are applied to the car.

The 'handbrake' is a parking or mechanical brake connected to the brake rigging and is operated by winding a chain onto a drum. Air brakes are liable to leak off when the car is left stationary for a period of time, so a mechanical brake is mandatory on all railroad equipment.

Making a Brake Application

In order to make a brake application, the engineman in the cab of the lead locomotive of the train will move the brake valve handle to the position that he judges will give him the amount of brake he needs. A decrease in brake pipe pressure, reducing the pressure from say 80 psi to 73 psi will cause the control valve to apply the brakes. This allows pressure in the brake pipe (running the length of the train) to fall. All control valves on all cars sense this drop in brake pipe pressure. The reduced brake pipe pressure causes the control valve's service piston to move up to the applied position and direct air from the car's auxiliary reservoir to the brake cylinder which causes the brake rigging to push the shoes against the wheels. Auxiliary reservoir air pressure then drops to where it is about equal to the reduced brake pipe pressure. He is able to do this until the auxiliary reservoir pressure and the brake cylinder pressure are equal and he has a full service brake. At that point all he has left is the additional braking from an emergency brake application. In order to make an emergency brake application, the brake pipe pressure is reduced VERY RAPIDLY to zero psi. This fast drop in pressure and quick action air moves the piston to the emergency position, connecting both the auxiliary and emergency reservoirs to the brake cylinder. The two reservoirs acting together give a 20% harder brake application. No air is taken from the emergency reservoir for a service brake application.

Preliminary Quick Service

In order to make sure that each control valve will sense and respond to a reduction in brake pipe pressure, the control valve vents to atmosphere a small amount of brake pipe pressure. This makes sure that the service piston moves to the applied position to set the brake and, at the same time, reinforces the application signal so that the next control valve in line senses

the drop in brake pipe pressure. Thus the application signal is transmitted down the train, one valve at a time at about 500 miles per hour.

On a long train the front end may have a significant brake long before the rear end. If a train is running stretched this may cause severe run-in problems as the train is bunched on the locomotive, due to slack action. The rear of the train will be moving faster than the front. To minimize this problem, the control valve is fitted with a 'quick service limiting valve'. If the train is stretched, the engineman will make a very light brake application so that the train will bunch gently on the locomotive. The quick service limiting valve operates to give about 10 psi of pressure build up in the brake cylinder on a minimum brake reduction.

As a result of this innovative technology, trains over a mile in length are not uncommon. Air brakes are crucial in controlling coupler slack, preventing damage and bringing a train to a stop, whether by service or emergency application. George Westinghouse could never have imagined a trio of Dash 8-40CM's pulling a manifest freight over BC Rail's 2.2% grades of the Squamish Subdivision.

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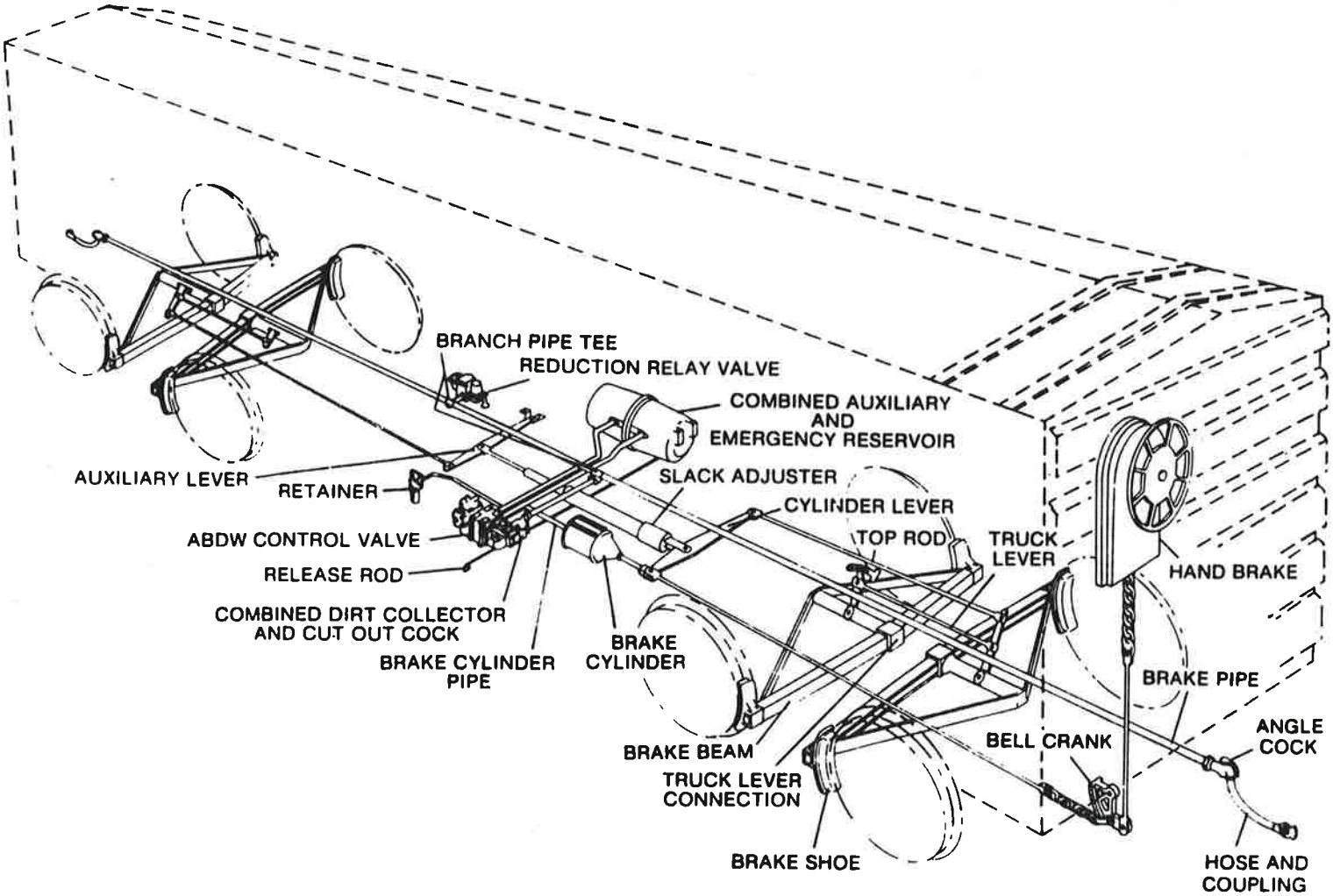


Locomotive Performance

Ron Tuff

While researching some prototype information about a locomotive's statistics, I came across a document written by the Plymouth Locomotive Works of Plymouth, Ohio. The document was a consumer's guide to purchasing a locomotive. As I read through it, I was intrigued by the factors involved in the purchase decision.

The tractive effort of a diesel locomotive is described as "the ability of a locomotive with sufficient horsepower to start rolling a given load (ie. train) without slipping it's wheels and is dependant on the locomotive's weight & drawbar pull, or pull at the coupler expressed in pounds". A diesel locomotive's drawbar pull is generally averaged at 25% of the weight on its drivers on clean, dry, unsanded rail.

Locomotive performance calculations are simply a process of equating FORCE (drawbar pull) with the opposing or retarding force of the train, or TRAIN RESISTANCE. Train resistance is the sum total of the ROLLING RESISTANCE of the cars, the resistance created by curvature or (CURVE RESISTANCE), and the resistance imposed by gradient, or GRADE RESISTANCE.

ROLLING RESISTANCE

Rolling resistance is the friction which must be overcome before any car or train is set in motion and is measured in pounds per ton of gross load. It is influenced by axle friction and it's loading, determined by the type of bearings, either friction or roller bearing and their maintenance. In addition the quality of the track, including the proper gauging of the rails, tamping, maintenance, as well as drainage. The following chart indicates this resistance in lbs/ton based on different types of rolling stock and track conditions.

Train Resistance in lbs / ton	Type of Cars	Track Condition	Type of Curves
6 - 10	Large modern with first class bearings	Excellent	None
10 - 25	Large standard with good bearings	Good	None
20 - 25	First class medium	Good	Easy
30 - 35	Small	Fair	Easy
40 - 45	Small, hard running	Poor	Easy
50 - 60	Poor	Poor	Sharp

GRADE RESISTANCE

Right-of-ways are seldom level or straight. Grade represents the rise or fall in a specific horizontal linear distance and is expressed as a percentage. The ruling grade on the Squamish Subdivision is 2.2% or twenty-six and three-eighths inches of rise in one hundred feet of distance. The resistance created by a grade is expressed in pounds and is generally accepted as 20 lbs./ton for each percent of grade.

CURVE RESISTANCE

Curves expressed in degrees also create train resistance and are often characterized by squealing wheel flanges. A one degree curve is equal to a radius of 5730 feet. This resistance is expressed in lbs/ton/degree of curvature and is generally accepted as 0.8 lbs. Common approximate curvatures are

Degree of Curve	Radius in Feet
1	5730
2	2865
4	1433
6	955
17	348 (48" Radius in HO scale)
22	262 (36" Radius in HO scale)
26	222 (30" Radius in HO scale)

(Is it any wonder our 85' passenger coaches appear off-centre as they travel through a 30" radius curve?)

The final factor influencing a locomotive's performance is the co-efficient of adhesion between the locomotive's wheels and the rail. This is expressed as a percentage of the weight of the locomotive supported by the drivers.

	Unsanded Rails	Sanded Rails
Most favourable conditions	35%	40%
Clean dry rail	25%	30%
Dry rail	18%	24%
Slippery moist rail	15%	20%
Dry, snow covered rail	11%	15%

How do all these factors relate? If a GMDD SD-40-2 with an operating weight of 192.5 tons were operating northbound over slippery, moist rail on the Squamish Subdivision between Cheakamus at milepost 50.0 and Alta Lake at milepost 74.4, how many loaded one hundred ton capacity cars, each with a gross weight of 131 tons, could it pull?

Here is a summary of the factors we need to consider for solving this problem.

Equation Factor	Locomotive	Freight Cars
Resistance due to friction (lbs/ton)	10	
Resistance due to grade (%)	2.2	2.2
Resistance due to curves (degrees)	3	3
Co-efficient of Adhesion for locomotive (%)	20	
Weight in tons	192.5	131

The equation we need is this:

$$\text{Number of Cars Loco Can Pull} = \frac{\text{Available Drawbar Pull of Loco (lbs)}}{\text{Resistance of 1 Car (lbs)}}$$

Here's how we go about solving the problem:

Available Drawbar Pull of Loco (lbs) = Drawbar Pull (lbs) - Sum of All Resistance Factors (lbs)

= (weight x adhesion) - (grade + curve) x weight

= {(192.5 tons x 2000 lbs) x 20%} - {(2.2% x 20 lbs/ton + 3 degrees x 0.8 lbs)} x 192.5 tons

= 77000 lbs - 8932 lbs

= 68068 lbs Available Drawbar Pull of Loco

Total Resistance = Rolling Resistance + Grade Resistance + Curvature Resistance

= Friction Resistance (lbs/ton) + Grade + Curve x 131 tons

= {10 lbs/ton + (2.2% x 20 lbs/ton) + (3 degrees x 0.8 lbs)} x 131 tons

= 56.4 lbs/ton x 131 tons

= 7388.4 lbs

We can now calculate the number of cars the SD-40-2 locomotive can pull.

Number of Cars Loco Can Pull = 68068 lbs / 7388.4 lbs

= 9.2 cars

According to BC Rail's Employee Timetable for the summer season, a 3000-horsepower locomotive can pull 1200 tons between the above stated mileposts. If these 100-ton capacity cars all had a gross weight of 131 tons, this would equate to 9.16 cars.

Number of Cars Loco Can Pull = Rated Tonnage of Locomotive / Weight of Load

= 1200 tons / 131 tons

= 9.16 cars (BC Rail's SD40-2 tonnage rating)

Does any of this, have any relation to model railroading? Yes! During your next operating session, a northbound freight extra makes a pick up at Squamish resulting in a train of 3540 tons to be forwarded to Cariboo Country. How many SD40-2's will your Motive Power Department have coupled to the headend, to provide the necessary prototypical drawbar pull to get the train over the Coastal Range Mountains?

Thanks to R.F. (Bob) Deno, BC Rail Supervisor of Special Equipment - Mechanical (retired), for his assistance in the preparation of this article.

VIDEO REVIEW

Big "E" Productions bills it new line of railfan videos as "No More Mindless Runbys!" The company's latest title, "Fraser River Canyon - BC Rail" is described as "24 hours of action in May of 1994 on BC Rail around Lillooet as trains climb in and out of the Fraser River Canyon. BC Rail runs 10,000 ton trains up 2.2% grades with slave units and pushers in some of the most awesome scenery anywhere."

Here's what two of our members had to say about this video:

Dick Eisfeller's new video release was filmed using HI-8 mm equipment over a 24-hour period beginning in the early evening and concluding the following day, Wednesday, May 25, 1994.

The tape opens with a freight lead by an 8-40CM and a SD40-2 climbing through the canyon while providing a brief history of the railway. Using a map and grade profile chart, he explains BC Rail's operational problems on the 2.2% grades around Lillooet (mile 157), particularly north along the Fraser River to Kelly Lake.

The videography includes through freights, locals, and Lillooet switcher and RDC passenger trains at trackside locations like Garibaldi, Mons, Seton Lake, Lillooet, Glenfraser, and Pavilion. Unfortunately, most of the scenes are poorly lit due to the heavy shadows in the canyon and overcast skies. All the trains are shown in their entirety, which is a little monotonous, and from a distance which does not allow the viewer to distinguish any specific details. For example, many modelers and historians would appreciate the car numbers of specific dogwood herald cars still operating in 1994.

Dick's narration is slow and methodical, describing freight trains such as "VP" Vancouver-Peace, "OV" Omenica-Vancouver, or "VC" Vancouver-Cariboo and their counterparts, including their scheduled departure times, typical traffic carried, tonnage, loads, empties and the position of either remote units or helper locomotives. These informative descriptions help the viewer understand BC Rail's operations.

This tape does not claim to show you all of the spectacular views one can get on BC Rail, but it does give you an insight into BC Rail's unique operations. Big E Productions "Fraser River Canyon -- BC Rail" is worth the modest price of the tape, particularly for the informative narration and scenery. (Ron Tuff, Stoney Creek ON)

Big "E" Productions, with graphics and narration by Dick Eisfeller, presents a 24-hour return visit to the BC Rail area of Lillooet, B.C. A night and day video taping of north and southbound trains. Not quite the level of Pentrex, as no grade crossing horn blowing, but a steady and complete viewing if the total car consist of each train. Views include the Cheakamus River near Garabaldi, along Seton and Anderson Lakes, the Lillooet depot and yard, the bridge across the Fraser two miles north of town, and the grade up out of the canyon towards Mons. All in all, an enjoyable and factual video glimpse of BC Rail, May 24-25, 1994. (Carter Cram, Redding CA)

Decals Available!

Andy Barber has 2 decal sets available exclusively to BCRH&TS members. Set One is for Mountain Pine's 50-foot boxcars and features four-colour artwork. This set, which will do one car, is priced at $5 CDN or $3 USD.

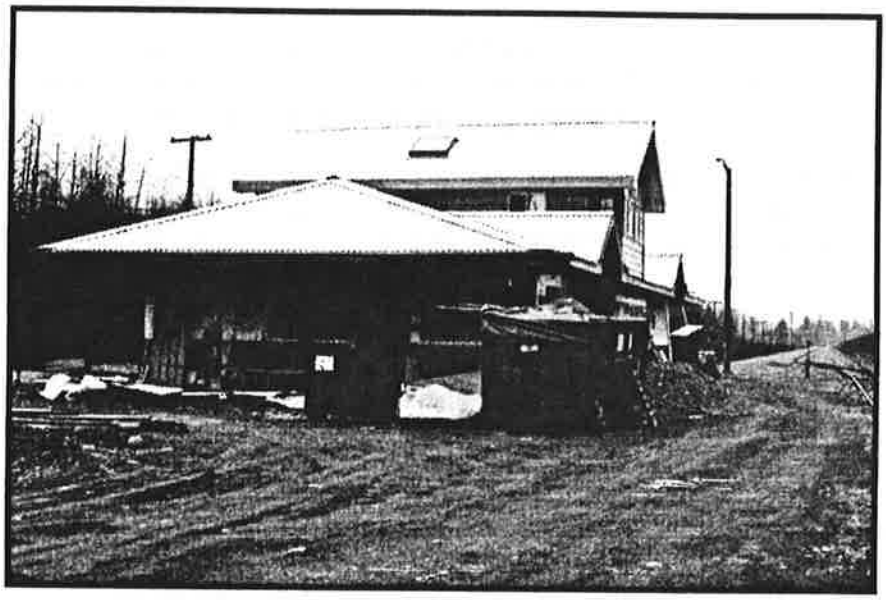
Set Two is for the NOKL boxcars. Lettering is white and each set will do two cars. Price is $3 CDN or $2 USD. Both sets were produced by Herald King, so the quality is top notch.

Contact Andy at 3718 Marine Vista, Cobble Hill, B.C. V0R 1L1.

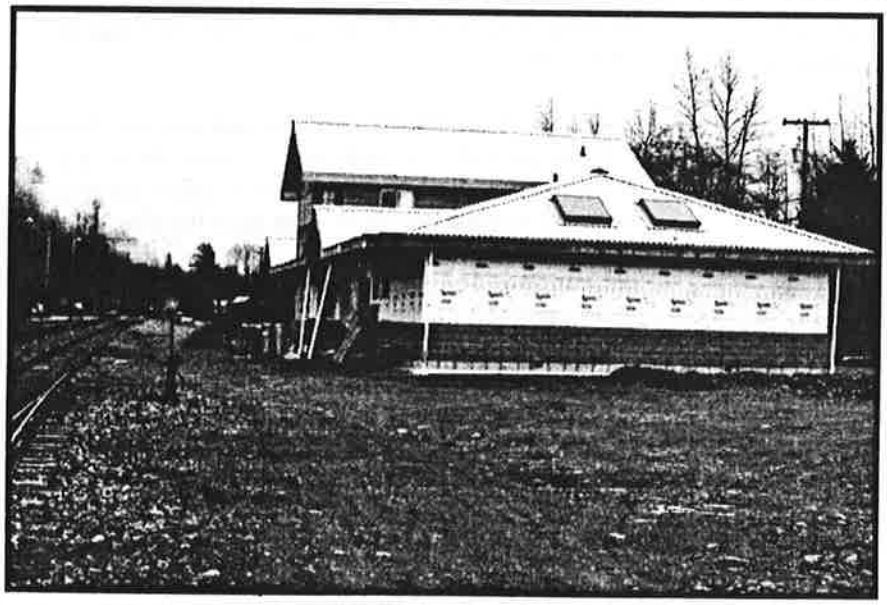
Squamish's New Station

Construction of the new station at Squamish is well underway. The new facility is located on the east side of the mainline near the northern end of the Squamish yard (mile 40.6). The upper floor will contain the local yard office in addition to an employee locker room. A portion of the North Vancouver crew dispatch office, which was located near the North Vancouver station, will now occupy a portion of the first floor. (Ed Note: The remainder has moved to the new North Vancouver yard office tower.) A newly installed link between Queensway and Government Road provides access to the station from the BC Rail shop complex.

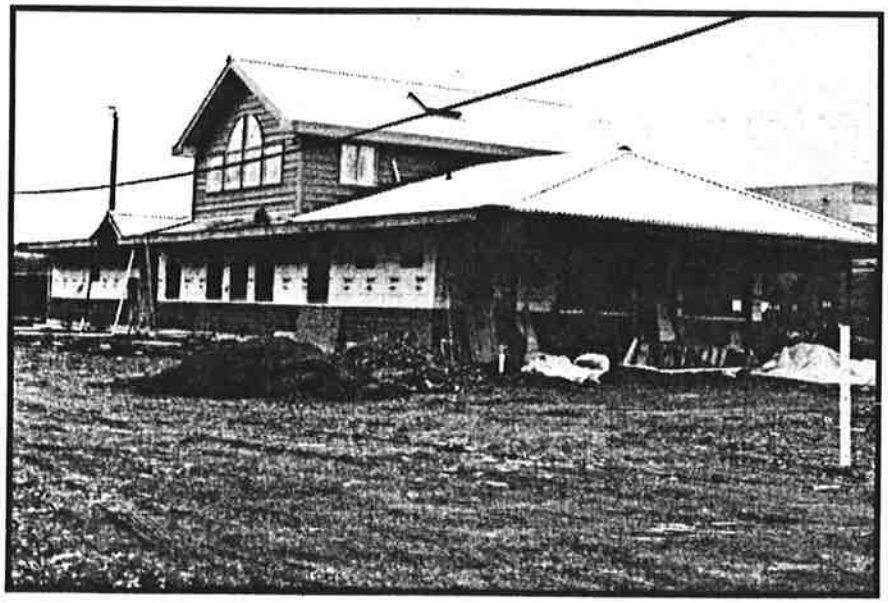
ALL PHOTOS COURTESY OF TREVOR MILLS.



North elevation.



South elevation.



Northeast elevation.