THE SANDHOUSE

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In This Issue

THE SANDHOUSE

THIS JOURNAL IS THE OFFICIAL PUBLICATION OF THE
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Press Date — August 25, 2007

Front cover: *A few frost-covered ties are all that remains of CN's Sussex Spur in south Burnaby, B.C., as CN 4716-7243-226-4709 lead a short train southward at MP 4.36 of the Lulu Island Industrial Branch on December 24, 2002 (Photo by Eric L. Johnson)*

Back cover: *Kamloops Heritage Railway's ex-CN 2-8-0 2141 had to wear a disguise for its role in a Canadian-Chinese co-production TV movie shot on the Kelowna Pacific Railway in June. Here's a view of the film star on June 11. (Photo by David J. Meridew)*

To Our Readers

As befits a journal with a focus on both historical and current matters, the subjects of this issue cover the full sweep of the pendulum.

The opening article by Eric Johnson takes us back some 75 years to explain how two moribund CNR rights-of-way in the Vancouver area got to be that way and how their fate was sealed from the beginning. The answer lies not in their construction or maintenance, but in the dry courtroom atmosphere of a Board of Railway Commissioners hearing. Eric has unearthed a fascinating tale of how the actions of regulators can change the course of history.

That's followed by a 21st century tale by David Meridew about how an early 20th century locomotive had to be disguised to play a part in a movie set in the 19th century.

Next we look at a contemporary event whose aftermath will play out for years to come -- the CN derailment on the Cheakamus River bridge in August 2005. The Transportation Safety Board recently released the report of its investigation, to much media attention. While local readers will undoubtedly have read or heard those media reports, this issue presents lengthy verbatim extracts of the TSB findings. Dry reading, to be sure, but of great interest to those interested in B.C. railways.

Finally, a bit of local maritime history, with some indirect railway connections. Duane Cooke observes the 50th anniversary of the Albion Ferry, which seems fated to pass from the scene in a few years.

All that leaves no space for our continuing coverage of the Canada Line project, which is certainly railway history in the making. We'll resume that story in the next issue -- in the meantime, have a look at the intriguing photograph on page 46.

Ian Smith, Editor

Dates to Remember

September 20 — PCD Meeting, Place des Arts, Coquitlam, 19:00. (Entertainment: Bill Johnston, "The Trans-Siberian Express and Russian Railways")

October 13-14 — Mt. Cheam Lions Club Model Railroad and Hobby Show, Chilliwack Heritage Park, 44140 Luckakuck Way; take freeway exit #116. 09:00– 17:00 on October 13 and 10:00-16:00 on October 14.

October 18 — PCD Meeting, Place des Arts, Coquitlam, 19:00. (Entertainment TBA)

November 10-11 — Trains 2008, Cameron Recreation Centre, Burnaby, 11:00-16:00

November 15 — PCD Meeting, Place des Arts, Coquitlam, 19:00. (Entertainment TBA)

Division News

The spring season wound down with two membership meetings before the summer break.

On May 17, members gathered to watch a video on VIA Rail's Canadian, in the days when the train still ran via the classic CPR route through Kicking Horse Pass. Rounding out the evening was a flea market, with members having the opportunity to buy surplus items from PCD's collection, mainly videotapes, books and calendars.

The last meeting before the mid-year break, on June 21, featured a show on the contemporary British railway scene, based on a trip by Ian Smith in 2006.

The weekend of July 7-8 was the occasion of the annual Fair in the Square at Heritage Square, Coquitlam. This event draws more visitors to the Fraser Mills Station museum operated by PCD than any other occasion, making it a good opportunity to acquaint the public with the Division's work. Manning the museum on July 7 were President Doug Battrum and Treasurer Alan Shaw, while Secretary Ian Smith played host to visitors on July 8.

Our 2007/08 season of meetings begins on September 20 with a show by Bill Johnston that will look at the Trans-Siberian Express and the railways of Russia. Bill travelled halfway across Russia earlier this year and will undoubtedly have a fascinating story to tell.

The weekend of October 13-14 will see PCD manning a display table at the annual Mt. Cheam Lions' Club Model Railroad and Hobby Show, in Chilliwack (see page 3). PCD participated in this event for the first time last year, and the response to our display warranted taking part again this year. Members wishing to assist on either day should contact Doug Battrum.

OBITUARY

Long-time national CRHA leader Fred Angus passed away on August 10 in Montreal after a long struggle with cancer.

Fred had joined CRHA in 1950, served as Secretary and Director from 1967 to 1980, and was editor of *Canadian Rail* from 1981 until his death. He was a founding member of the Canadian Railway Museum (now Exporail) at Delson-St. Constant, Que., which opened in 1960.

The new pavilion at Exporail will be named Angus Pavilion in honour of Fred, his generosity to CRHA and his family's long association with the Canadian Pacific Railway. The railway's famed Angus Shops in Montreal were named after Fred's great-grandfather, R.B. Angus, a financier who was a CPR director and president of the Bank of Montreal.

YEARS AGO IN THE SANDHOUSE

30 Years Ago (August 1977 issue)

— A CN freight derailed 12 cars of phosphate rock on Cisco bridge on August 4, sparking a fire.

25 Years Ago (July 1982 issue)

— Urban Transit Authority buys five GP9s for proposed Vancouver-Coquitlam commuter service.

— Fire damage closes Fraser River bridge at New Westminster for 26 days.

20 Years Ago (June 1987 issue)

— New rest rules for crew are introduced, a result of the Hinton crash inquiry.

15 Years Ago (June 1992 issue)

— CN takes over operation of Fraser River bridge at New Westminster on April 1.

10 Years Ago (June 1997 issue)

— A washout at Conrad in the Fraser Canyon claims the lives of two CN crewmen on March 26.

— BC Rail launches the Pacific Starlight dinner train.

5 Years Ago (Summer 2002 issue)

— BC Rail's business cars and Royal Hudson coaches are put up for sale.

— Manned pusher locomotives make a brief return to CPR's Rogers Pass.

— Vancouver's Downtown Historic Railway has been extended from Quebec Street to Science World.

— The Kamloops Heritage Railway opens for business, making its first runs on June 29.

— CPR's Vancouver Intermodal Facility is being expanded, with 12 new tracks at the east end.

CNR's Lulu Island Branch Failed to Make Connections

by Eric L. Johnson

In early 1929, Canadian National Railways (CNR) announced plans for its new Lulu Island Branch, some 32 miles of track in total. More than 27 miles would be in Richmond, and there would be both construction of new track and rehabilitation of most of the Canadian Northern Pacific Railway (CNoPR) line that ceased to function in 1919.

(Ed.: For a discussion of that CNoPR line, see the author's article "The Canadian Northern Pacific on Lulu Island" in the Winter 2002/03 issue, pages 6-15).

Mile 0 would be at the north end of the Fraser River Bridge in New Westminster, as the CNoPR had originally intended. At three points, connections (interchanges) were to be made with track operated by the British Columbia Electric Railway (BCER):

(1) from mile 4.44 of the Lulu Island branch, the 1.88-mile Sussex Avenue spur would connect with the Vancouver and Lulu Island Railway (V&LIR) line to Marpole, owned by Canadian Pacific Railway (CPR) and leased and operated by BCER;

(2) from mile 10.53 of the Lulu Island branch, at the north foot of Shell Road in Richmond, the 1.24-mile Tucks spur would connect at the BCER/V&LIR Tucks station on the Steveston line, at the south end of the Fraser River bridge between Vancouver and Richmond, and;

(3) at Steveston, the branch would reconnect with the BCER via rail laid in 1913 by the CNoPR and still in place.

Only surveying was done in 1929, but construction was completed in 1930, albeit with just 20 miles of rail laid instead of the projected 31 miles. Only a fraction of the old CNoPR south shore line was rehabilitated and the spur south from the Lulu Island bridge (mile 4.88) to Ewen's Landing -- although graded -- was not laid with rail.

The Sussex and Tucks spurs were graded and all rail was laid, but no switches were yet fixed between those two spurs and BCER lines. A wye was built at the junction of the Tucks Spur and the new north shore line. At that point, the new line swung south, parallel with Shell Road, to a point where it reached the old CNoPR south shore line, where a second wye was built.

But the line to Steveston was not rehabilitated as planned, and a re-connection there was never made with the BCER, although its legality was never questioned. (For an overall map of CNR and BCER lines on Lulu Island, see page 14 of *The Sandhouse*, Winter 2002/03.)

The CNR made two applications, dated September 15, 1930, to the Canadian Board of Railway Commissioners for permission to make the Sussex and Tucks connections (interchanges) with BCER, and hearings were held in Vancouver on October 21 and 22, 1931. The judgment handed down on December 16, 1931, is recorded in an obscure 19-page government report, "Canada Railway Commissioners Judgments, etc., V.20-21, 1930/32" (UBC Libraries KG48 T73 V. 20-21).

At the hearings, the CNR was represented by lawyer Alistair Fraser and various supporters

gave testimony in favour of the application. Opposing the application, the CPR was represented by its lawyer, a Mr. McMullen. The CNR's supporters included the North Fraser Harbour Commissioners, the municipalities of Richmond, Burnaby and Vancouver, the Boards of Trade for Richmond, Vancouver, South Burnaby and the Fraser Valley, and grain, timber and concrete industries in the vicinity.

In advancing his argument in favour of the application, the CNR's Fraser rested his case on the specific 1929 legislation that authorized the federal government to provide funding for construction of the branchline, titled "An Act Respecting the Construction of a Canadian National Railway Line from New Westminster to a point on Lulu Island, in the province of British Columbia, with branches therefrom."

He noted that a schedule to that Act specified that one branch (the Sussex Spur) was described as running "From a point North of the proposed crossing of the River Northwesterly *to join with* the British Columbia Electric Railway" and that the other branch (the Tucks Spur) would run "From a point near Section 23, Range 6 West, Block 5 North, *to join with* the tracks of the British Columbia Electric Railway near Tucks." (italics added)

On that basis, Fraser argued, since the Act explicitly described the proposed spurs as joining with the BCER (V&LIR), the application should not be judged according to the usual standard for interchanges between railways, contained in Section 253 of the Railway Act, which gave the Board of Railway Commissioners discretion to approve or disallow an interchange.

But Chief Commissioner C.P. Fullerton, K.C., presiding over the hearing with fellow Commissioner J.A. Stoneman, rejected that argument, saying that the 1929 Act simply authorized the government to spend up to $1.5 million to build the branch, but did not confer powers upon CNR that would exempt it from the usual provisions of the Railway Act concerning interchanges.

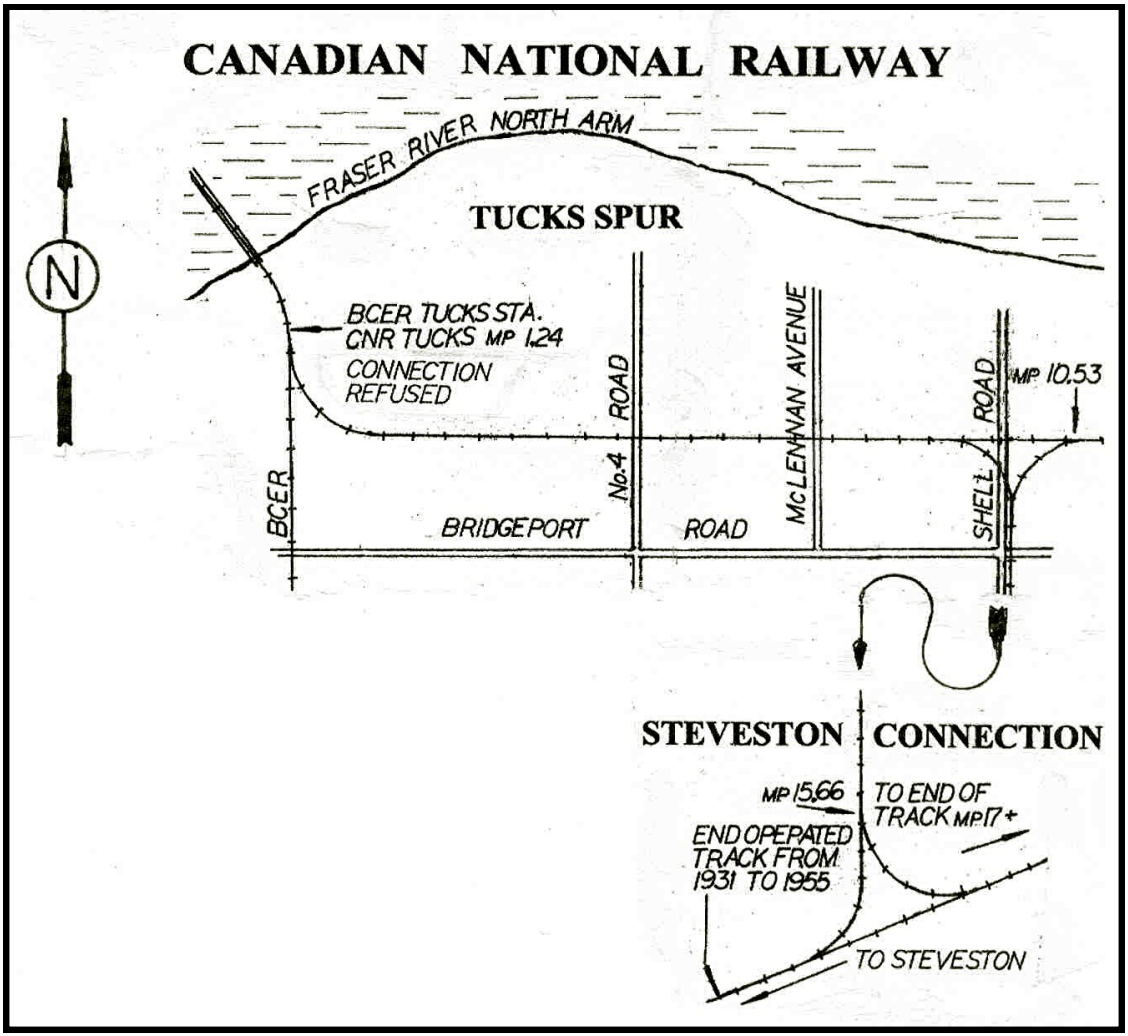
In his reasons for judgment, Fullerton reviewed 18 precedents that spanned several decades.

The earlier precedents had been quite restrictive in granting interchange rights. Fullerton cited an earlier judgment in which one of his predecessors had stated: "It does not seem to me to be a reasonable proposition that one railway company should be at liberty to use the Act for the purpose of diverting to its line traffic that has been originated only at great expense and trouble by another railway or other railways, *without at least showing a great preponderance of convenience to the public*." (italics added)

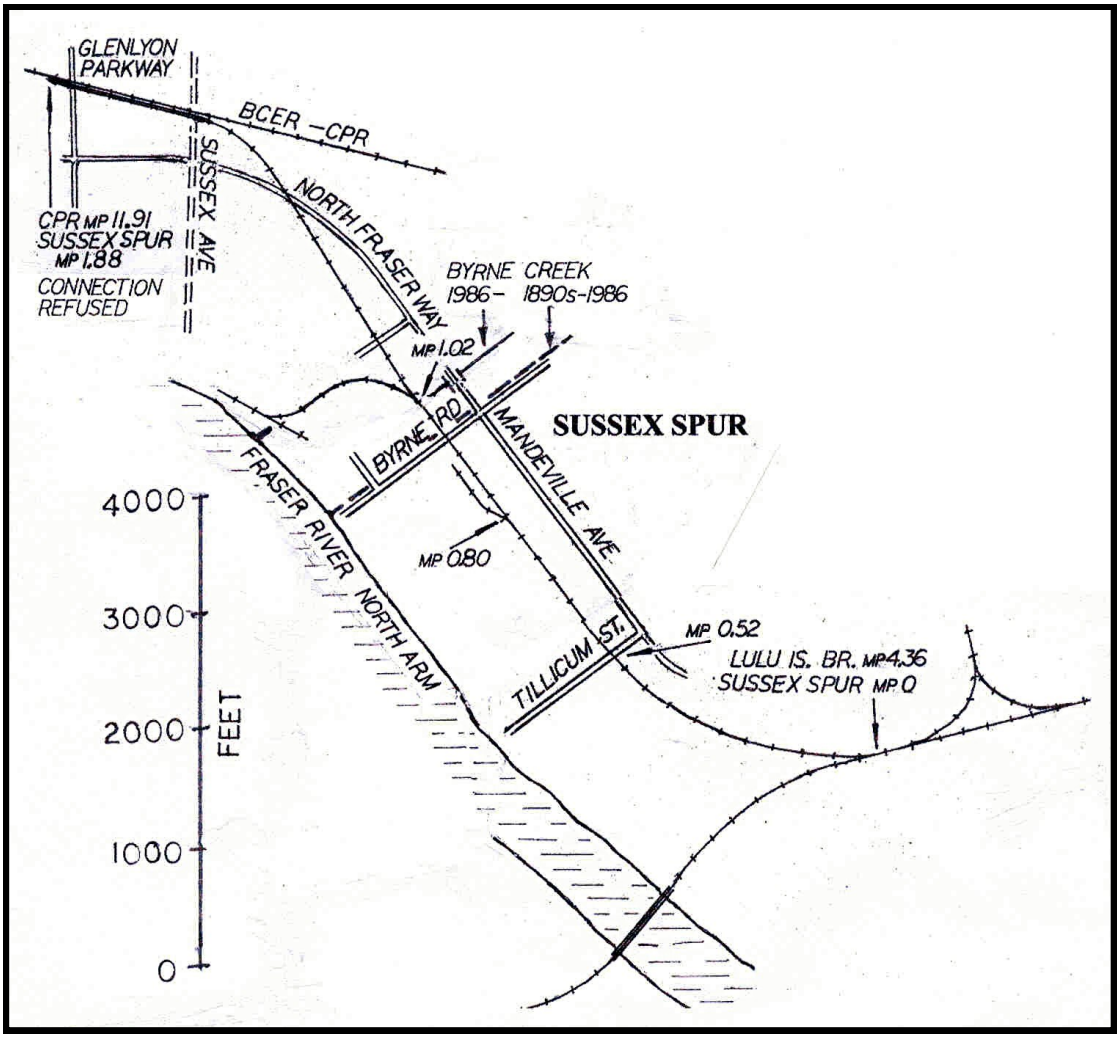
In another early case, a Chief Commissioner had written that: "Perhaps it should be stated that transfer tracks are not are not ordered simply because some railway asks for them. Neither railway is entitled to them as a right in itself. The property and advantages of one railway should not be interfered with for the mere benefit of another. *Public interest, economy of movement to the shipper, and convenience must be established*." (italics added)

In considering these and other precedents, Chief Commissioner Fullerton concluded that the Board had "consistently followed the principle that a paramount public necessity must be established to justify the granting of an interchange."
A turning point in the Board's rulings had come in the case of a grain terminal in Fort William, Ont., at the head of Lake Superior (now part of Thunder Bay). The terminal was served by CPR and wanted the Board to grant an interchange so that it could be connected also to CNR.

The Board approved that application, noting the vital role played by the Lakehead terminals. The Chief Commissioner of the day wrote that "I am unable to see how the Board would be justified in refusing any elevator at the head of the lakes to connect, at its own expense, of course, with any railway entering that territory."



CNR's proposed connection with the BCER at Tucks on Lulu Island was never completed, owing to the 1931 decision of the federal government's Board of Railway Commissioners. The rail laid for this spur was soon pulled up, and today most of the right-of-way to the west of the wye at Shell Road forms the city-owned Bridgeport walking trail. The main line did continue south to Steveston, but the connection there with BCER was not completed, although there were no legal obstacles to doing so.



The Sussex Spur in south Burnaby had a much longer life than the Tucks Spur, but it too was not permitted to connect with the BCER as CNR had hoped. The end of operated track on the 1.88-mile spur was at MP 1.02, but the unused track beyond was not lifted until 1953. The spur saw little use after 1970, but until early 2001, about 1,200 ft. of rail were in place from mile 0, although the switch had been removed several years earlier. By 2002, the last rails were gone. (Maps by Eric L. Johnson)

As Fullerton continued to review the subsequent precedents, he noted that the Fort William case seemed to have become the new standard, even though the later applications did not have the special grounds applying to terminal elevators, and that the Board had become much more liberal in approving applications for interchanges.

Even though this more liberal policy had been applied for some years, Fullerton decided that enough was enough.

"Having carefully examined all the above [18] cases; as well as others included in the Board's reports, I have been forced to the conclusion that the Board has in recent years given entirely too wide a construction to the sections of the Railway Act dealing with interchanges.

"I think one can safely say that under the recent decisions of the Board, it is only necessary to show that a connection between two railways is physically possible, and that some little traffic may result to justify the granting of an interchange.

“It is my view that the Board has gone entirely too far in the granting of interchanges, and that it is time it returned to the principles laid down in the earlier decisions.”

At this point in his judgment, the Chief Commissioner reviewed the specifics of the CNR's application.

"Now let us examine the situation in the present case. Traffic from points on the Vancouver and Lulu Island Railway may be interchanged and delivered to the Canadian National Railways at New Westminster or Chilliwack; to the Canadian Pacific Railway at Abbotsford; to the Great Northern Railway at New Westminster; and to the Northern Pacific Railway at Huntingdon (Sumas, Wash.). The British Columbia Electric Railway is an intermediate carrier with respect to deliveries at Chilliwack, Abbotsford and Huntingdon.

"From the standpoint of enabling traffic from (or to) points on the Vancouver and Lulu Island Railway to reach the tracks of the other railways in that district, the necessary connections and interchange for this purpose at present exist and the interchanges applied for are not, therefore, in any way necessary to meet any existing lack of facilities for interchanging between the carriers serving this district."

Fullerton then made an interesting observation about the unique characteristics of this case.

He noted that if CNR's application were to be approved, nearly all of the V&LIR's trackage would be within four miles of an interchange. This would make that trackage subject to the Board's interswitching orders -- and related tolls -- that applied across Canada.

Interswitching rates are applied to traffic that originates with a defined distance of an interchange point. For many years in Canada, that distance was four miles (it was extended to 30 kilometres only in 1987).

The effect is to impose a regulated tariff governing how much can be charged by the railway that connects the shipper to the interchange point. In these cases, that railway can only receive the interswitching rate set by regulation, rather than receiving a proportional share of the rate charged for the full line haul from origin to destination.

As Chief Commissioner Fullerton noted, in the circumstances of 1931, that would mean, if CNR were granted the Tucks and Sussex interchanges, "the Vancouver and Lulu Island Railway would be required to receive an empty car from the Canadian National Railways at an interchange point, switch it to the industry for loading and then switch the loaded car to the Canadian National Railways at the interchange point for a charge of one cent per 100 pounds.

"To the extent of the success of the Canadian National Railways in soliciting such traffic for movement via their line through interswitching, and the desires of the shippers, the Vancouver and Lulu Island Railway would receive on this traffic for the service described only one cent per 100 pounds in comparison with its division of the through rate as far as New Westminster and the earning of the British Columbia Electric Railway to junction points already referred to."

After reviewing the testimony of supporters of the CNR application, Chief Commissioner Fullerton summed up the arguments of the rival railways' lawyers, gave his conclusion and rendered his decision:

"Mr. McMullen, on behalf of the Canadian Pacific Railway Company, claims that the applications in this case are for the sole purpose of securing to the Canadian National Railways a share of the business now held by the Vancouver and Lulu Island Railway.

"Mr. Fraser, on behalf of the Canadian National Railways, scouts the idea and says that the sole object is to offer additional inducement to indus-

In this 1958 aerial view looking northwest at the Oak Street bridge under construction, the scene is blanketed in snow, providing excellent contrast that distinctly reveals the curve of the Tucks Spur right-of-way in the upper left quadrant, at the point where the spur would have joined BCER's line to Steveston, had the connection been permitted by the Board of Railway Commissioners. (City of Richmond Archives photo 1977 2 5)

tries to locate south of the North Fraser along their new line, where they hope to build up a large industrial area.

"It is impossible for me to accept the suggestion that the Canadian National Railways expended a million and a half of money on this new line, which at the present time does not possess a single industry, with the sole idea that they were to sit down and wait for industries to be built along it. No doubt they hope that some time in the future industries will be established, but, in the meantime, the purpose clearly is to secure a share of the Canadian Pacific Railway Company's business.

"I might add that tactics of this nature are by no means peculiar to the Canadian National Railways. The Canadian Pacific Railway Company is equally an offender, as anyone who has any knowledge of railway construction, e.g. in the Drumheller Valley, knows. The efforts of one railway to invade territory which the other has developed is responsible for a great deal of the unnecessary duplication of railways which exists in Canada to-day, and nothing, in my opinion, encourages the practice more than too much liberality in the granting of interchanges.

"The applications will be dismissed."

Commissioner Stoneman concurred with this decision and, on December 16, 1931, the applications were indeed dismissed.

The Board of Railway Commissioners was inclined to act as a political arm of the government, which at the time of the Tucks and Sussex Spurs decision was controlled by Prime Minister R.B. Bennett's CPR-friendly Conservative Party. With Canada in the throes of the depression, the much-affected CPR was certainly not willing to let the upstart CNR infringe on its territory. Did that have an influence on the outcome of this application? (For a better understanding of how much influence the CPR had over Canada's legislators, the book *The CPR -- A Century of Corporate Welfare,* by Robert Chodos, presents a far different picture of the CPR than the mainstream view.)

Ironically, Chief Commissioner Fullerton would go on to become the chairman of CNR's board of trustees in 1934, an appointment made by Prime Minister Bennett, who governed from 1930 to 1935. A former justice of the Manitoba Court of Appeal, Fullerton has been described as having high principles but limited business experience, and, like the other appointed CNR trustees, was a Conservative Party supporter (see *The People's Railway: A History of Canadian National*, by Donald MacKay).
As CNR's chairman, he adopted a fiercely competitive attitude toward the CPR, even though his mandate from the government was to cooperate with the CPR and reduce duplication of services, as both railways struggled with the effects of the depression. In his book *Train Country,* MacKay notes that Fullerton fought to maintain CN's independence when pressures were exerted to amalgamate CN with CPR.

In light of Fullerton's reputation as a man of high principles, his judicial experience and his later independent approach to presiding over the CNR, there seem to be no grounds for suggesting that his decision in this case was based on political considerations or a bias toward one railway or another.
Regardless of what drove the Board's decision on the Tucks and Sussex spurs, the matter was settled and the proposed connections with the V&LIR were never made.

Neither was the CNR/V&LIR reconnection at Steveston, although there was no question it would have been legal, since the interchange had been completed and was in operation by the CNoPR 15 years earlier. Most of the rail west of the south end wye leading toward Steveston had been lifted by the 1950s.

It was a long seven miles of track from Tucks Junction to The Canada Rice Mills, Ltd., plant at

mile 17 -- the only customer on that line from 1932 until 1946, when Delta Glucose Refinery Ltd./Delta Flour Mills Ltd. built a plant just west of Woodward's Landing (at the south foot of No. 5 Road).

The Canada Rice Mill plant is now occupied by Ocean Fisheries, but is not rail-served. Delta Glucose is believed to have quit operations in the 1960s, and its site is now occupied by Fraser River Pile and Dredge Ltd., as a sand and gravel depot. Not until 1972 did the south shore line come into its own in a big way, with the establishment of Fraser Wharves at mile 17.3.

A considerable sum was spent by the CNR on the Sussex and Tucks spurs, almost for naught.

From Shell Road, the Tucks Spur was to have made a connection with the V&LIR at BCER's Tucks station, which has been described by author Dellis Clelland as no more than a platform at the south end of the Fraser River bridge (just west of today's Oak Street Bridge). CNR's spur was completely graded and laid with rail -- except for fixing of the interchange switch -- but Clelland notes that the rail was soon pulled up and some of it used on the Bargen Brothers wood plant spur (between No. 5 Road and Shell Road?).

Mile 0 of the Tucks Spur was at the junction of a wye that was in use until the end of steam locomotive days. Rail of the wye was then pulled up and eventually the CNR sold the spur's right-of-way east of Shell Road, and it is now occupied by businesses fronting on Shell Road. Almost all of the spur right-of-way west of Shell Road is

On April 20, 2001, GP9RM units CN 7040 and 7045 lead a train from Lulu Island northbound past the severed connection between the Lulu Island Industrial Branch and the Sussex Spur at right. The switch had been removed several years earlier, but about 1,200 ft. of rail remained on the old spur. By the following year, it had been lifted.
(Photo by Eric L. Johnson)

now the Bridgeport Trail, a walking trail owned by the City of Richmond.

Interestingly, the right-of-way of the west leg of the wye is still undeveloped -- the rear ends of residential housing lots, fronting on McKessock Place, border the curving right-of way. Does the City of Richmond see this as a future transit corridor? A most apparent section of built-up grade can be seen at the intersection of the trail with McLennan Avenue. After passing beneath the Oak Street Bridge, the trail ends at Van Horne Way, since the last few hundred feet of the spur's grade alongside Garden City Way, and the site of Tucks Station, have been obliterated.

The Sussex Avenue spur did see very limited action. The connection with the V&LIR at its mile 11.91 would have been made a few dozen feet west of today's Glenlyon Parkway in south Burnaby. The spur converged on the V&LIR at Sussex Avenue which, in this part of Burnaby, no longer exists. There, the CNR laid siding and passing tracks, about 1,400 ft. in length, paralleling the V&LIR**.**

Soon after the dismissal of the interchange applications, the end of operated track on the 1.88-mile Sussex spur was given as mile 1.02, but not until 1953 was the rusty rail of the bramble-choked grade from there to the junction pulled up.

At about mile 0.96, a 60-foot bridge of five pile bents crossed over the ditch (Byrne Creek) that paralleled the west side of Byrne Road. For the longest time, there was only one customer on the line, Western Plywood at a spur at mile 0.80. Later, another spur was built, swinging southerly from mile 1.02 to a point near the North Arm of the Fraser River (it is believed that spur had served a sawmill there).

After about 1970, the Sussex Spur saw little use and was gradually cut back as property in the area was developed.

Today, no trace of the mile 1.02 spur can be found, but to explain the change more clearly we must go back to 1894 when Byrne Creek, as it existed for about 100 years, was created. A logging operator high on Burnaby's south slope built a chute down today's Gilley Avenue ravine, at the base of which "Byrne's logging ditch" was dredged in a perfectly straight line, paralleling Byrne Road right to the Fraser River.

For years, private dwellings along the west side of Byrne Road were accessed by bridges across the "ditch". Then, in 1986, the City of Burnaby dredged a new Byrne Creek channel a few hundred feet west of Byrne Road and filled in "Byrne's logging ditch" in order to widen Byrne Road -- work is still being carried on there. However, instead of continuing straight on after reaching Mandeville Avenue, the new Byrne Creek bed swung onto the right-of-way of the mile 1.02 spur, where it first curved westerly, then south-westerly, to reach the Fraser River. Thus, no signs of that spur's grade remain.

Today, all rail is gone from the Sussex Spur. Until early 2001, about 1,200 ft. of rail was in place from mile 0, although the switch had been removed several years earlier. By 2002, the last of the rail was lifted, and the grade today is undisturbed up to about mile 0.33.

From there to Tillicum Street, at mile 0.52, business developments now occupy the grade. From Tillicum Street to mile 0.62, the grade is covered with a deep layer of pre-loading fill in preparation for development. From there to Byrne Road, the grade is overgrown with a tangle of blackberry brambles, ties visible, and the 0.80 mile spur barely detectable.

Under an even greater mass of blackberry bushes is the grade from Byrne Road to the new Byrne Creek channel. From that point on to the intended Sussex Spur/V&LIR junction, not a single bit of evidence of the grade remains. The ground has been bull-dozed level, and at the

stretch where the siding was laid, the new businesses of Glenlyon Industrial Park have been established.

Leading south-easterly from Glenlyon Parkway is newly-created North Fraser Way which is presently under construction, leading right to Marine Way. Mandeville Avenue (which had existed only between Byrne Road and Tillicum Street) no longer goes by that name, having been recently sign-posted as a part of North Fraser Way.

Possibly the last use of the Sussex Spur was made in January 1995, when the British Columbia government's ex-CPR 2-8-0 steam locomotive 3716 was stabled overnight on the remains of the Sussex spur during filming of the movie *The Road Home*. Filming was done across the river on the Richmond portion of the Lulu Island Branch.

ACKNOWLEDGEMENTS

Thanks to Henry Ewert for the CNR base map, to Ian Smith for summarizing the Fullerton decision, and to Les Kozma, Lynne Waller (City of Richmond Archives), Jim Wolf (City of Burnaby, Planning Dept.), and Alexis Sarter (City of Burnaby, Parks Dept.). Also consulted was *Early Transportation in Richmond*, by Dellis Clelland, 1972.

2141 Puts on Disguise for TV Movie Role

by David J. Meridew

The Kamloops Heritage Railway's ex-CN 2-8-0 steam locomotive 2141 had an important role to play in a joint Chinese-CBC television co-production movie filmed in China and British Columbia. Titled "Iron Road", the movie will be aired on the CBC next February 2008 in two segments of two hours each.

The movie features actors Sun Li, Luke MacFarlane, Sam Neill, Ian Tracey, Peter O'Toole and steam engine No. 238, complete with two very old-looking passenger cars and two flat cars. No. 238 is 2141 in disguise, filmed over a nine-day period in June this year.

The disguise included a diamond smokestack, a vertical-bar pilot and the removal of the Kamloops Heritage Railway herald from the tender and the white stripe along its walkways.

I first saw No. 238 at Campbell Creek in a rainstorm on the morning of Wednesday, June 6. The run up the hill on the Kelowna Pacific Railway was cancelled that day, because heavy rain the night before had washed out a dirt road from Highway 97 in to a grade crossing, near mile 21. As a result, the movie crew couldn't get their trucks in to work on the sets.

No. 238 made its first climb out of Campbell Creek on June 7, evading photographers with an 05:00 start. The next day it started from Campbell Creek at 11:00, and stayed up the hill for 16 hours of filming, not returning until 03:00 on June 9.

Just a few hours later, at 08:30, it again made the climb out of Campbell Creek, but this time taking a break from the movie to work the scheduled Armstrong Explorer excursion to Armstrong.

On Sunday, June 10, it was back to its movie duties, and I saw it at 06:00, pushing two old wooden passenger cars, two miles up the grade at mile 17.5 of KPR's Okanagan Subdivision.

Word got out that at 06:00 on June 11, No. 238 would make the climb without any cars in front of it. Its role that day was to be filmed going through the tunnel at mile 20.4. I was able to catch a ride on the train up to the tunnel to watch that happen.

But first the train crew went right on through the tunnel, past the movie set at mile 20.5 and on to breakfast at the canteen tent, where the movie supply camp was located at a dirt-road grade crossing in from Highway 97. I joined the crew for bacon, sausages, eggs and coffee.

At the supply camp, the make-up and wardrobe department made the final touch-ups on the actors and extras, most of whom were portraying 1880's railway construction workers from China.

A little farther south of the supply camp was a second movie set, where filming would take place later in the day using No. 238.

After breakfast, we left the camp to head back downgrade through the tunnel to drop off the caboose at mile 20.3. The Kamloops Heritage Railway crew consisted of conductor Elmer Jordan, engineer Roger Blagborne and fireman Bud Forbes.

There was one Kelowna Pacific employee with

us on the train, whose role was to communicate with KPR. A freight train out of Vernon was due through this site in the evening and the caboose was blocking the mainline.

At the point where the caboose was dropped, I hopped off and went back up to the tunnel to get a photograph of No. 238 approaching. Then I walked over the hill above the tunnel to shoot some telephoto views of the movie set with the train in the midst of it.

A railfan interested in the locomotive on a movie set has to be prepared for a game of hurry up and wait for something to happen. And when something does finally happen, it happens over and over again, as the actors speak their lines and the crew changes camera angle.

Speaking of cameras, all kinds were employed, mostly using film. The two largest were shooting with 70mm movie film. Another, using 35mm movie film, was strapped below the engineer's cabside, shooting forward.

I came down to trackside at the south end of the tunnel and selected a telephoto location in some small trees to hide me from the prying eyes of the two movie cameras that were going to be coming at me, mounted on the moving train. This hidden location gave me a decent view of the south portal from the east side of the track.
But acting was still going on at the set of tents, wagons, construction tools, supplies and log town that was located at mile 20.5. The camera crew would occasionally have to suggest to members of that other crew (who were all decked out in orange high-visibility safety vests) that if they would please just move a little more to the right or a little more to the left, they would not stand out in the viewfinders among all those actors and extras in 1880's costumes.

The most prominent features of 2141's disguise as 238 were a diamond smokestack and a pilot of vertical bars added in front of its solid pilot. (All photos by David J. Meridew)

So I took a rest in the shade of a tree for two hours and waited -- as I did not want to walk around in plain view down at the tunnel and upset the director, whose assistants had done a very good job of keeping everyone from the 21st century behind the cameras and away from the tunnel, where the next shoot was going to take place. Instead, I hid out, vestless, in the foliage. On the set the director was boss, second only to Bob Ozubko, Operations Manager of Kelowna Pacific Railway, which had permitted CBC and Chinese television to use the railway for set location and filming trains.

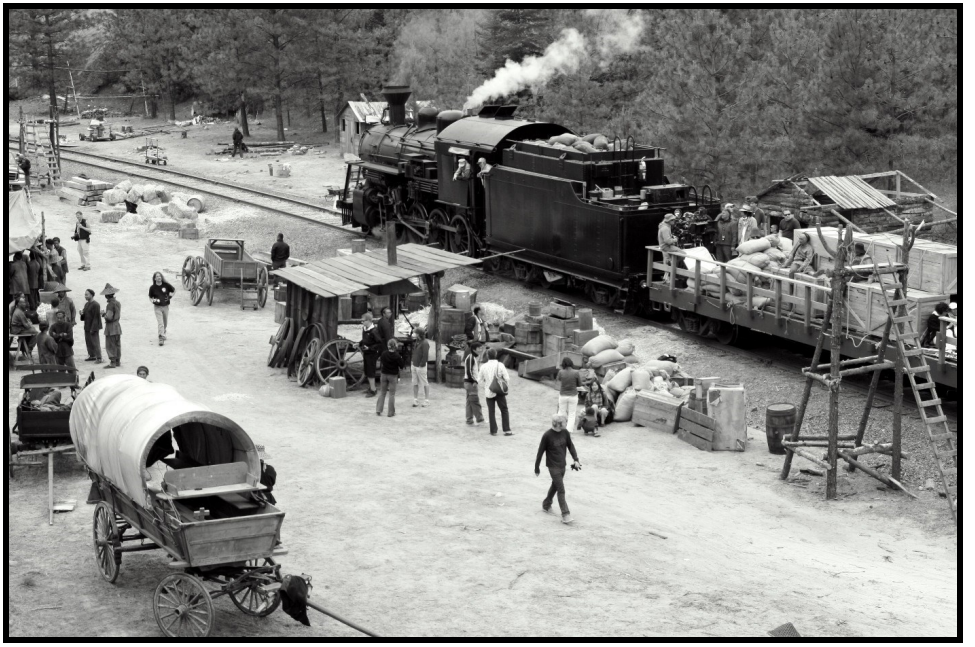
Finally, at 10:30, the director called out "action" and filming began through the tunnel with No. 238 and two flat cars. The flat cars did not belong to KHR or KPR; they were requested as needed for the movie.

The scene was shot over and over again, allowing me to get several tunnel portal photos with just the locomotive showing.

The flat car at the north end of the train stopped each time just short of the parked caboose, and then went up through the tunnel again and again to the tent town set on the other side.

After the tunnel shots were done, I walked up to the tent town set for a few more shots of No. 238, before heading home down the grade on foot. It took me a few hours to reach 21st-century civilization and transportation to London Drugs in Kamloops, where my film would be digitized and printed.

Back on the set, filming would go on until well after dark at a second location. Film crews sure



The movie set is a hive of activity, with stagehands in 21st-century clothing mingling among all the authentic props, including a covered wagon and, of course, No. 238.

work long hours to make a movie.

The two 1870's style passenger cars used in the film were movie props concocted from KHR's open-sided cars 301 and 302. The north (or east) side of the cars had false sides added to make them look like passenger coaches, but they were left in their regular state on the opposite side.

The train wasn't needed for the filming at the second set the next day. But on the day after, June 13, No. 238 went back up the hill in the afternoon for more filming. Then, at dawn on June 14, a film crew in a helicopter shot the locomotive running along Monte Lake.

By 13:15 that afternoon, No. 238 and all the cars were back in Kamloops. And two days later, the locomotive had re-emerged as 2141 and the two open cars had also been returned to their usual appearance. Their brief time in the spotlight was over, but you'll be able to see them in their movie role on TV next February.

Two passenger cars were created by tricking up KHR open-sided cars 301 and 302, but only on the one side needed for the movie shots.

TSB Issues Findings on CN's Cheakamus Derailment

Nearly two years after the spectacular derailment of a CN freight train at the Cheakamus River bridge on the former BC Rail Squamish Subdivision, the Transportation Safety Board of Canada released its findings on July 11 in an official report.

While there were no injuries, the escape of caustic soda from a tank car that plunged off the bridge caused the death of 500,000 fish, and generated high-profile news coverage. Coming barely a year after CN took over operation of BC Rail on what amounts to a perpetual lease, the incident became a lightning rod for critics of CN's approach to train handling.

Reflecting this controversy, the findings weren't simply posted to TSB's website along with a news release. Instead, TSB chair Wendy Tadros and senior officials released the report at a news conference in Squamish on July 11.

The full report (R05V0141) is available at http://www.bst.gc.ca/en/reports/rail/2005. This article summarizes the report with extensive direct quotation, edited only for style, with an emphasis on train-handling procedures that will interest *Sandhouse* readers.

The report begins with this matter-of-fact synopsis of the incident:

"At approximately 07:20 Pacific daylight time on 05 August 2005, Canadian National freight train A47151-05, proceeding northward from Squamish to Lillooet, British Columbia, derailed nine cars including one load of sodium hydroxide (UN 1824), also known as caustic soda, and eight empty cars at Mile 56.6 of the Squamish Subdivision near Garibaldi, British Columbia. Approximately 40,000 litres of the caustic soda spilled into the Cheakamus River, causing extensive environmental damage. There were no injuries."

Following the usual format of TSB accident reports, the document begins by setting out the known factual information, then analyzes the facts, makes conclusions and states recommendations.

FACTUAL INFORMATION

It describes the circumstances leading up to the derailment as follows.

"On 05 August 2005, at approximately 06:24 Pacific daylight time, Canadian National freight train A47151-05 departed Squamish, B.C., on the Squamish Subdivision, destined for Prince George, B.C. The method of train control was the Occupancy Control System, authorized by the *Canadian Rail Operating Rules* and supervised by a rail traffic controller (RTC) located in Edmonton, Alberta. The train consisted of five locomotives on the head end, three loads and 141 empties, with two remote locomotives behind the 101st car. It was about 9,340 ft. long and weighed approximately 5,002 tons.

"The train was marshalled as follows: five locomotives on the head end, followed by one empty box car, three tank cars loaded with sodium hydroxide, six empty centrebeam flat cars, 97 empty chip gondola, box and flat cars, two remote locomotives, and 37 empty box and chip gondola cars.

"The second, fourth and fifth lead locomotives were online, providing 11,800 horsepower (HP) on 18 driving axles. The lead locomotive, BCOL 4607, was isolated and the third locomo-

tive was shut down. The remote locomotives were online but not loading [power]."

The report notes that the leading locomotives were BCOL 4607, 4645, 4651, 766 and CN 2568 (all but the last facing forward), and the remote-controlled slave units were BCOL 4652 and 4621 (facing backward).

Regarding remote-controlled distributed power operation, the report explains in a footnote that "distributed power trains have additional operating locomotives positioned in the train; for example, at the midway point, two-thirds of the way back or at the rear. The distribution of power enables the operation of longer, heavier trains while providing a means to control or minimize in-train forces."

The report continues:

"Both the lead locomotive consist and the remote locomotive consist comprised General Electric (GE) Dash 8 and GE Dash 9 locomotives. However, both consists were marshalled with an older, Dash 8 locomotive in the lead position. The Operator Interface Module (OIM) on the Dash 8 does not display the actual power output or "loading status" of the remote power whereas the more current Dash 9 does so.

"The train crew, a locomotive engineer and a conductor, were ordered at 05:30 to take the train from Squamish to Lillooet, British Columbia [*The train had originated in North Vancouver*]. They met fitness and rest standards established to help ensure the safe operation of trains. The conductor was making his second trip on the Squamish Subdivision in 19 months and second trip in main-track service in 11 years.

"The locomotive engineer was familiar with the subdivision. He was qualified to operate distributed power (DP) trains between Squamish and Prince George. He had operated DP trains for a number of years up until the time BC Rail (BCR) stopped doing so in June 2003. He had operated DP trains on the Squamish Subdivision since the resumption of northbound DP train operation by CN in June 2005. DP was implemented on southbound train A47051 in April 2005.

"The inbound [*North Vancouver to Squamish*] and outbound [*Squamish to Lillooet*] crews were both in Squamish at the same time and a transfer between crews took place. The North Vancouver crew had received DP trouble alarms that should have alerted them to a potential DP problem, but no irregularities were noted and passed on to the Squamish crew. Although the topography between North Vancouver and Squamish does not necessarily require DP, the train was intended to be run with operative DP out of North Vancouver and continue onward to Prince George."

Locomotive Event Recorder Information

"The zone speed is 25 mph from Mile 10.9 to Mile 42.0 on the Squamish Subdivision. The train reached a maximum speed of 25.2 mph in throttle position 5 at 06:44:17 near Mile 40, then began to reduce speed as it ascended the grades north of Cheakamus. Because the locomotive engineer believed that the locomotives in the remote consist were not providing tractive effort, the locomotive engineer performed a test to confirm this suspicion. This was accomplished by using a DP system feature that allows the remote consist to be operated independently from the head-end consist. The remote consist was placed in throttle position 8 and the lead locomotive consist was throttled down to idle.

"Although the locomotive event recorder (LER) indicated that controlling remote locomotive BCOL 4621 was in throttle position 8, there was no resulting forward push. Train speed continued to decrease, leading the crew to conclude that the remote locomotives were either not online or were not working. With the train travelling at 8.5 mph, the locomotive engineer brought the lead locomotive, BCOL 4607, online, adding 4,400 HP and six more driving

axles to the train for a total of 16,200 HP and 24 driving axles.

"Zone speed was 35 mph between Mile 42.0 and Mile 50.8 on the Squamish Subdivision. With the added horsepower, the train increased speed to a maximum of 34.2 mph in throttle position 8 at 06:49:51.7. The throttle was then reduced as the train approached Mile 50.8, where a new zone speed of 20 mph began. The train reached a maximum speed of 36 mph at 06:51:11.2 in throttle position 5 and the throttle was then manipulated until a speed of 22.7 mph was achieved in throttle position 8 at 06:58:56.5. The train was able to proceed close to track speed up the grades of 1.04 per cent to 2.14 per cent between Mile 51 and Mile 56.

"Before the accident, as the train negotiated the mountain grades and heavy curvature in throttle position 8, the LER recorded the first of several wheel slips at 06:59:39, indicated by a sharp increase/decrease in speed in one or two seconds. About 15 minutes later, while travelling at 14 mph with the throttle in position 8, through a set of reverse curves across the Cheakamus River Bridge at Mile 56.6, the train went into emergency.

"After making the necessary emergency broadcast and notifying the RTC, the conductor initiated an inspection of the train, discovering that nine cars (the 4th to the 12th) had derailed to the west (inside) of the 12-degree 20-minute left-hand curve at the Cheakamus River Bridge. A total of four cars had fallen off the bridge: tank car PROX 64041, a load of 73 per cent concentration sodium hydroxide (4th car), and three empty centrebeam flat cars.

"The tank car struck the concrete bridge pier and landed on the north bank of the river and the three empty centrebeam flat cars behind it landed on their sides on the river bed. The four derailed cars following, three empty centre beam flat cars and an empty wood-chip gondola car, were on their sides. The 12th car, an empty wood-chip gondola, was upright, with only the north end derailed.

"The 9,347-foot train was stretched over approximately 18 curves, half of which were greater than or equal to nine degrees on ascending grades between 1.90% and 2.10%."

With that, the report had set out the bare facts of the accident.

Former BC Rail Operations

Considerable space is devoted to a comparison of CN and BC Rail operating practices on the BC Rail mainline.

"CN's operating instructions are the same as those that were in effect under BCR. CN's Operating Manual, Section 3.0 (Equipment Handling), specifies the tonnage limit for conventional train operation on ascending grades between Cheakamus and Mons to no more than 2,700 tons trailing any empty car that is more than 80 feet in length. Section A-4 limits trains handling loads and empties to 18 driving axles and 4,200 tons and the trailing tonnage inclusive of loads and non-driving locomotives to 4,600 tons. Loads are to be marshalled immediately behind the locomotives, subject to the marshalling requirements of dangerous commodities.

"The total tonnage on train A47151-05 was 5,002 plus an additional 400 tons for the two non-operating remote locomotives, which exceeded the trailing tonnage limit of 4,600 tons by 17 per cent as calculated for a conventional train.

"Train operation on the steep grades and sharp curvature on the former BCR route between North Vancouver and Prince George demands extra care to avoid derailments. BCR was aware of the challenging physical environment and engaged the services of various experts in the development of its operating practices.

Southward Trains

"Before 1999, the vast majority of loaded southward trains moving from Prince George to North Vancouver were DP powered with two GE Dash 8/Dash 9 locomotives at the head end and one GE Dash 8/Dash 9 remote locomotive located approximately one-half to two-thirds of the way behind the lead locomotives by car count. The mechanical staff in Prince George prepared and qualified DP locomotive consists when required. These trains weighed approximately 10,000 tons, which is slightly below the maximum haulage capacity for the three GE Dash 8/Dash 9 locomotives.

"With this tonnage, the train was able to reach Darcy, Mile 122.9, where all loaded southbound trains were pushed, with [manned] helper locomotives, up and over the mountains to Mons, Mile 77.4.

"BCR's review of train operating practices determined that the tractive effort capability of three GE Dash 8/Dash 9 locomotives in conventional operation would not exceed the drawbar capacity of the car equipment; therefore, there was no competitive advantage to running DP trains. It was recommended that only southward trains moving from Prince George to North Vancouver that exceeded 11,000 tons would run as DP trains. A train of this weight required at least four GE Dash 8/Dash 9 locomotives to reach Darcy.

"The tractive effort capability of four GE Dash 8/Dash 9 locomotives in conventional operation easily exceeds the drawbar capacity of the car equipment; therefore, it was further recommended that the locomotives for a train this heavy be configured with two locomotives at the head end and two locomotives in the remote location one-half the way back in the train by car count. This recommendation was adopted in the spring of 2002, but from then until the spring of 2005, there were no southward DP trains operating between Prince George and North Vancouver.

Northward Trains

"At BCR, the great majority of cars on northward trains were empties. The BCR General Operating Instructions (GOIs), commonly referred to as the "orange book," Section 10.1, which came into effect on 01 April 1995, limited lead, remote and helper engine consists to 13,500 working horsepower. Section 10.4 limited northward conventional trains [that is, without remote locomotives] on ascending 2 per cent grades between Squamish, Mile 40.4 of the Squamish Subdivision, and Kelly Lake, Mile 192.6 of the Lillooet Subdivision, to 4,600 tons, a maximum of 12,000 HP and a maximum of 80 cars when handling only empties.

"When handling loads, the 80 empty car limit may be exceeded by the number of loads in the train. Loads must be handled immediately behind the lead consist, subject to dangerous goods marshalling instructions. DP was used on any train that had more than 80 empty cars. These restrictions were put in place to reduce the risk of long trains with light, empty cars stringlining the sharp curves due to high tractive effort on steep grades. The mechanical staff situated in North Vancouver prepared and qualified DP consists when required."

(The report notes that "stringlining a curve occurs when the flanges of the wheels climb the inside rail and derail, rather than travel around the curve. Due to high longitudinal and associated lateral forces when pulling, the train has a tendency to straighten out like a string pulled taut.")

BC Rail reviewed its instructions for operating DP trains in 2001 and 2003, the report notes.

Following the 2003 review, "Northward conventional trains operating on ascending grades be-

tween Cheakamus and Mons, Pemberton and Birken, and Fountain and Kelly Lake were then restricted to a maximum of 13,200 working horsepower; tonnage was not to exceed 4,600 tons and a maximum of 80 empties.

"These restrictions were revised again in August 2003 stating that: no more than 2,700 tons are to trail any empty car that is more than 80 feet in length; any loaded car must be handled as close as possible to the head end; there is a maximum of 12 driving axles on trains handling empties only; there is a maximum of 18 driving axles on trains handling loaded and empty cars, provided the tonnage of the empties does not exceed the haulage capacity for 12 driving axles and the trailing tonnage does not exceed 4,600 tons.

"The horsepower restriction was replaced with a restriction on the number of driving axles because it is excessive tractive effort, not horsepower, that will cause trains with long, empty cars to stringline and derail when operating through sharp curvature and on steep grades. A further revision in March 2005 removed the requirement that tonnage of the empty cars not exceed the haulage capacity for 12 driving axles and restricted trains with loaded and empty cars to 4,200 tons.

"Before the 2003 revision . . . BCR was running a three-train schedule northward on a daily basis. With the previous conventional train instructions (80 empties when handling conventional trains), BCR did not have the capacity to move all the tonnage with the three conventional trains unless remote locomotives or DP was used. Once the conventional train instructions were revised, DP was no longer necessary to move the tonnage.

"From the time the recommendation was adopted until the spring of 2005, all northward trains operating between North Vancouver and Prince George were operated as conventional trains. Another recommendation adopted by BCR for general freight service limited the maximum permissible driving axles for a working consist of GE Dash 8/Dash 9 locomotives to 18 (three locomotives). Other locomotives could be added to the train provided they were coupled to the lead consist, and were isolated or shut down."
With that, the report turns to CN's approach to train handling on the former BC Rail mainline.

Operation Following Acquisition by CN

"On 15 July 2004, CN acquired the BCR system. In order to achieve operational efficiencies and cost reductions, CN planned on one train per day [on the former BC Rail mainline], using its main-line corridor eastward from Prince George for the balance of the traffic. In addition, southward tonnage originating at Quesnel and Williams Lake was moved northward through Prince George.

"Subsequently, it became evident that Prince George could not handle the extra tonnage and it was necessary to reroute more northward traffic than anticipated back through North Vancouver to relieve the congestion at Prince George. This extra tonnage was more than could be handled by one conventional train. Running two or more shorter trains instead of one longer train would be difficult, given that there were now crew shortages due to the reduction of employees.

"After the acquisition, there was significant personnel turnover, including operational staff reductions and retirements. In the summer of 2005, supervisors were required to operate trains to make up for this shortfall.

"Longer trains, which are more cost-efficient to operate than multiple trains, could move the tonnage if DP were used. CN envisioned the use of long DP trains as part of its operating plan following the acquisition of BCR and, in June 2005, CN resumed long train operations on the North Vancouver-to-Prince George route based on operating practices in BCR's General Operating Instructions (GOIs) and monthly bul-

letins in effect.

"On 24 March 2005, Operating Bulletin 29 was issued, limiting conventional trains on ascending grades between Cheakamus (Mile 50.5) and Mons (Mile 77.4) to no more than 2,700 tons trailing any empty car that is more than 80 ft. in length. In addition, a maximum of 18 driving axles was permitted on conventional trains handling loaded and empty cars, provided the tonnage of cars does not exceed 4,200 tons and the trailing tonnage inclusive of loads and non-driving locomotives does not exceed 4,600 tons. The requirement for a maximum of 12 driving axles on trains handling only empty cars was removed.

"The section entitled "Equipment Handling - CN Operating Manual Section 3.0" of the August 2005 monthly reissue of operating bulletins restricted lead, remote and helper engine consists to a maximum of 13,500 working horsepower on conventional trains (no remotes). The August bulletin reissue repeated the trailing tonnage restrictions in the March 2005 Operating Bulletin 29.

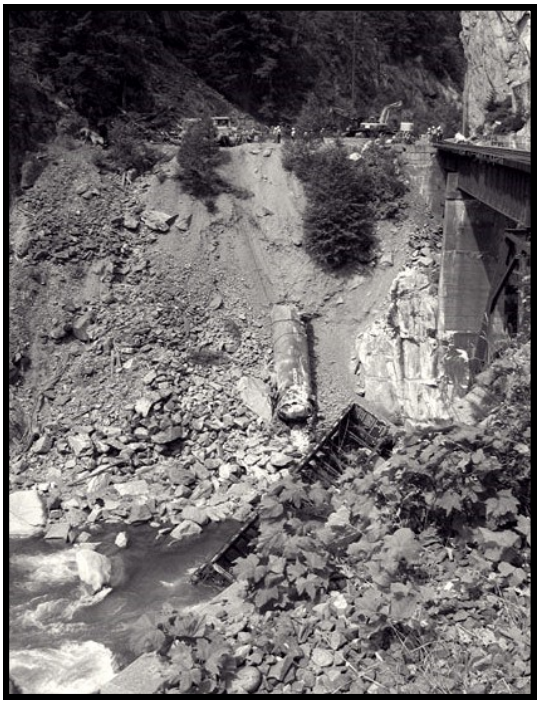
"CN and BCR GOIs have always required that cars less than 50 ft. in length must not be marshalled next to cars longer than 80 ft. in length, with the exception of a caboose on the rear of a train. Six of the cars following the three short loaded tank cars were empty centrebeam flat cars between 79 ft. 7 in. and 80 ft. 6 in. in length. The three loaded 44-ft. tank cars were marshalled behind a 55-ft. empty box car behind the locomotives in accordance with the requirement that loaded car(s) must be placed immediately adjacent to the locomotive consist, notwithstanding marshalling requirements of dangerous commodities (not next to the locomotive consist).

"CN and BCR operating manuals do not discuss train length or tonnage limits for trains operating with DP other than to require the remote consist locomotives to be positioned in the train one-half to two-thirds behind the lead locomotive consist using car count.

"All four people in the road foreman positions left BCR shortly after the CN acquisition (the last former BCR employee in this position retired in December 2005). The four positions have since been reduced to one."

Safety Management Systems

"Transport Canada (TC) worked with CN as part of the process leading up to the acquisition of BCR by CN on 15 July 2004. CN prepared a Safety Integration Plan that was reviewed at length with TC and a number of changes to the



In the aftermath of the derailment, the wrecked tank car lies on the northern slope perpendicular to the Cheakamus River, and an empty centrebeam flatcar is still in the water.

(TSB photo)

associated plans were made as a result of these discussions. This process reviewed 19 issues, including safety culture and practices, safety management systems, regulatory reporting, operating practices, and work/rest and medical standards.

“Two areas of specific focus were the replacement of rock patrols [in rail-mounted pick-up trucks] with remote sensors in some areas, and the reduction in the number of northbound trains from three to four trains daily to a single train per day.

"No formal risk assessment was performed before CN's decision to operate DP trains, although TC agreed that operating one train per day made the overall system safer as it would minimize the possibility of conflict with the passenger service between Lillooet and Darcy.

"Since BCR had operated DP trains in the past according to train handling instructions approved by the former provincial regulator, the British Columbia Safety Authority, CN decided that no formal risk assessment was required when it resumed running DP trains over the territory."

Distributed Power Set-up

The report goes on to discuss the differences in how BC Rail and CN would set up locomotives for DP operation prior to the start of a trip.

"When BCR was running remote locomotives on the North Vancouver-to-Prince George corridor, there was mechanical staff at both locations that would take the inward locomotives preassigned to a subsequent DP train, re-sequence and test the equipment for proper operation before the locomotive engineers took control of the power. Locomotive engineers were not expected to set up their power in remote mode and test it.

"After the CN acquisition, locomotive engineers in North Vancouver were required to set up their remote locomotive consists with the help of an electrician from CN's Thornton Yard, as mechanical staff positions in North Vancouver had been abolished. At this time, CN decided that no formal or refresher training in DP set-up and operation was warranted because BCR personnel were previously trained and experienced in DP operations and BCR operating instructions had not changed following the acquisition.

"BCR mechanical personnel were deemed qualified and experienced in DP set-up and troubleshooting and electricians newly tasked with performing DP set-up at North Vancouver had received instructions from two experienced electricians from Prince George. No formal training was provided to locomotive engineers but job briefings were conducted regarding implementing DP on train A470. In addition, the road foreman provided assistance on the shop track at times to both mechanical personnel and operating crews in setting up and testing DP locomotives."

In the case of the train that derailed at Cheakamus, the report states that: "The electrician from Thornton Yard completed CN Mechanical Form MP213 verifying that the DP set-up was done in accordance with established procedures and no exceptions were noted."

In fact, the set-up had not been done correctly, as would be discovered during the investigation. The report states:

"Subsequent to the accident, an inspection of both remote consist locomotives was performed by CN maintenance staff. This inspection revealed high traction motor current and flashover damage that indicate that both locomotives experienced significant electrical fault conditions. High current faults occur for the thermal protection of the traction motor, and flashover faults occur due to shorting across the armature during "plugging state" *when remote locomotives are commanded to go in the opposite direction from lead locomotives*. (italics added)

"To protect the locomotives from further damage, each locomotive is provided with control and protection circuits designed to prevent the locomotive from developing horsepower when serious faults are detected. Faults reset automatically once; the next occurrence within a 200-minute window requires a manual reset. Alarms are given for each fault, and no more alarms were given after all the traction motors isolated themselves within 11 to 14 minutes after departing North Vancouver."

With the remote locomotives having effectively shut down to prevent damage to their traction motors, the seeds had been sown for the derailment.

ANALYSIS

At this stage, the report turns from the investigators' findings on the facts to an analysis of what caused the accident.

The Accident

"The condition of the track and rolling stock were not considered contributory to this accident. The curvature, grade and position of the derailed cars are characteristic of an event involving high in-train draft forces. Therefore, the analysis will focus on the in-train forces (train dynamics), train operating practices, train marshalling and distributed power.

"As the train traversed the sharp left-hand curve on the ascending grade at the derailment location, high lateral forces developed on the low rail as draft forces stretched the train. Although flange and top of rail lubrication worked to reduce the lateral curving forces, a high L/V (lateral to vertical force) ratio resulted due to the relatively low offsetting vertical force exerted by the light weight of the empty centrebeam flat cars. With the elastic fasteners, steel ties and good ballast on the curve resisting rail rollover, the wheels climbed the rail and the train derailed as it stringlined to the inside of the left-hand curve.

"Due to the combination of steep ascending grade, sharp curvature, trailing tonnage and the long-short car coupling on train A471, high longitudinal forces created by excessive locomotive tractive effort concentrated on the train head-end resulted in high lateral forces being developed with high L/V ratio on the derailed cars."

Distributed Power

After stating what had happened, the report focuses on the reasons, beginning with the improper set-up of the remote locomotives.

In summary, data from the locomotives' computers showed that the controlling head-end master locomotive BCOL 4607 and the controlling slave locomotive BCOL 4621 were set-up to operate in the same direction, but BCOL 4621 was actually facing rearward in the train, so the head-end and remote units would respond to the throttle commands by pulling in opposite directions.

As noted above, the traction motors in the two slave locomotives automatically shut themselves down to protect against damage, and the crew did not attempt to deal with the fault, possibly because the remote control locomotives were not needed for the level grade between North Vancouver and Squamish.

This may have resulted from misinterpretation of the fault alarm system.

"The investigation determined that the traction motor current and flashover fault TL2 alarms that occurred shortly after leaving North Vancouver were silenced automatically by the locomotive computer. In the circumstances, once the remote locomotives attempted to load in the opposite direction twice, they went into protection mode and the audible alarm automatically silenced. . . . This prevented recurrence of the

alarms, but no direct indication of the inoperative state of the remote locomotives was relayed to either crew."

Locomotive Faults and Alarms

The report notes that on a BC Rail Dash 8 locomotive like 4607, "there are 584 different faults that will activate a TL2 alarm [which both sounds an audible bell alarm and displays a red light on the control panel]. A serious condition conveys no sense of urgency as TL2 alarms sound the same for all faults."

Whatever the reason for the crew not responding to the first alarm, the report states that without functioning slave locomotives, "train A471 became a conventional train subject to conventional train restrictions." But it was not handled that way.

"The inoperative state of the remote locomotives had serious implications for train handling and the continued safe operation of the train north of Squamish. Train A47151 left North Vancouver with four operable locomotives, three of which were online delivering 11,800 HP with 18 driving axles. To compensate for the lack of remote locomotive power and to maintain speed up the grade [after leaving Squamish with the second crew], the lead locomotive was brought online, adding 4,400 HP and six driving axles to the head end.

"If the train were to stall ascending the 2% grade, it would require significant time and effort to resume operation. For instance, it may have been necessary to provide an additional engine and crew to double the hill.

"The prospect of stalling at this location presented the locomotive engineer with potential consequences that made the risk of adding head-end horsepower not unreasonable. The conductor, who was making only his second trip on the Squamish Subdivision in 19 months and second trip on the road in 11 years, did not challenge the locomotive engineer's decision to bring another head-end locomotive online. This action resulted in train A471 exceeding powered axle and horsepower restrictions for conventional trains."

Train Tonnage and Marshalling Restrictions

Analysis also focused on the way the train had been marshalled.

"CN's and BCR's trailing tonnage restrictions applied behind empty cars more than 80 ft. in length. Following the box car and the three short 44-ft. loaded tank cars [near the head-end] were six empty centrebeam flat cars between 79 ft. 7 in. and 80 ft. 6 in. in length. These cars for all intents and purposes are 80 ft. or longer. The trailing tonnage and coupling restrictions apply to cars more than 80 ft. in length, which excludes many of the centrebeam flat cars.

"Given the intent of the instruction to limit high drawbar force on long, empty centrebeam flat cars operating through high curvature, the restrictions were inadequate to capture all empty cars close to 80 ft. in length, increasing the risk of derailment due to excessive trailing tonnage behind these types of cars.

"This occurrence was the first of four similar derailments involving long, empty DP trains that occurred on the Squamish Subdivision between 05 August and 05 December 2005 [all were Train 471]. While the contributing factors differed, the common feature of all four derailments was derailed trains stringlined to the low rail, or inside of sharp curves."

Long Distributed Power Train Operation

Another aspect of TSB's analysis looked at the knowledge and training required to operate long trains with distributed power in the challenging terrain of the BC Rail mainline.

"When CN acquired BCR, the organization was

restructured to improve productivity and CN planned to use long DP trains. The number of northbound trains was reduced and the operation of long, single DP train operations was resumed in the spring of 2005. Operational staff reductions and retirements led to a shortage of train crews and loss of corporate operational knowledge and experience.

"The road foremen positions were eliminated and replaced with a trainmaster, a CN employee with no operational experience on the BCR territory. The CN trainmaster was to be trained by the last BCR road foreman, but due to a shortage of train crews, many supervisors including the foreman were called upon to run trains, taking them away from their mentoring and supervisory duties.

"Although the locomotive engineer operating train A471 was qualified to operate DP trains between Squamish and Prince George and had done so for a number of years up until the time BCR stopped operating DP trains in June 2003, he and other locomotive engineers did not receive any formal training when CN resumed long DP train operations.

"In addition, with the transition back to long DP train operations, mechanical staff at North Vancouver and Prince George were no longer tasked with setting up the remote control consist independently from locomotive engineers. This task now became the joint responsibility of locomotive engineers with the assistance of a mechanical department electrician. The locomotive engineers were not provided with formal training on the proper set-up of the remote locomotives."

CONCLUSIONS

With the analysis complete, the investigators stated their conclusions.

Eight conclusions were reached regarding the causes of the accident and contributing factors:

♦ The train derailed on a 1.97 per cent ascending grade when it stringlined to the inside of the 12-degree 20-minute left-hand curve over the Cheakamus River Bridge.

♦ The combination of excessive locomotive tractive effort and trailing tonnage, along with long-short car coupling, produced high lateral forces and a correspondingly high lateral/vertical (L/V) ratio and wheel lift, causing the train to stringline the curve.

♦ The distributed power (DP) locomotives were set up incorrectly in North Vancouver, resulting in significant electrical faults when the remote locomotive consist was brought online, and the activation of protection circuits preventing them from developing horsepower.

♦ Although Train Line 2 (TL2) alarms were generated by the faults in the remote consist, they did not result in the first crew (North Vancouver to Squamish) identifying the problem or initiating any action.

♦ Because the train had been marshalled with earlier-model locomotives (Dash 8s) leading the head end and also controlling the remote consist, no direct indication of the inoperative state of the remote locomotives was provided to either crew. Deployment of two of the four available Dash 9s in these positions would have provided this indication.

♦ With the DP locomotives unavailable, train A471 became a conventional train and subject to conventional train restrictions, which were not applied.

♦ Bringing the lead locomotive online resulted in additional horsepower and driving axles exceeding powered axle and horsepower restrictions for conventional trains.

♦ Canadian National (CN) had prepared a Safety Integration Plan and provided informal training in DP set-up and operations. However, in the absence of a formal risk assessment, CN resumed long DP train operations without adequate consideration of the value of retaining and using local knowledge and experience in the operation of long DP trains. This resulted in a lack of training and proper supervision that contributed to this derailment.

Two conclusions were reached regarding risk factors.

♦ The General Operating Instructions (GOIs) restrictions in effect at the time were inadequate to capture all empty cars close to 80 ft. in length, increasing the risk of derailment due to excessive trailing tonnage behind these types of cars.

♦ In the absence of specific details on locomotive faults identified by TL2 alarms, and their effect on locomotive operation, it is difficult for locomotive engineers to determine the appropriate action when alarms occur.

SAFETY ACTION

After citing the conclusions, the report turns to recommendations and follow-up action.

Action Taken

Transport Canada's responses to CN's train handling practices were initiated in the wake of the Cheakamus derailment on August 5 and the three other stringlining incidents on the Squamish Subdivision that occurred within months on October 24, November 3 and December 8, 2005. These are outlined in the report, and can be summarized as follows.

Three days after the October 24 derailment at Mile 54, Transport Canada ordered CN to restrict northward conventional trains handling only empty cars to a maximum of 12 driving axles on steep ascending grades in the Squamish area.

The day after the November 3 derailment at Mile 15, CN was ordered to limit the length of its conventional trains to a maximum of 12 driving axles and 80 cars while operating northbound between Squamish and Clinton. CN responded with Operating Bulletin No. 92, which revised the instructions for handling conventional trains on ascending grades between Cheakamus and Mons, Pemberton and Birken, and Fountain and Kelly Lake, including the restriction ordered by Transport Canada.

As well, tonnage was limited to 2,700 tons trailing any empty car of 76 ft. or more in length; the maximum number of driving axles was set at 18 on trains handling loaded and empty cars, provided the tonnage of empty cars did not exceed 4,200 tons and the trailing tonnage inclusive of non-driving locomotives did not exceed 4,600 tons; and a conventional freight train was defined as one either without distributed/remote power, or a train with such power within the make-up of the train but not operative, or which had become inoperative en-route.

The Transport Canada order also required CN to provide a detailed analysis of its DP train operations in the Squamish area and a comprehensive risk assessment of any changes CN had made to BCR's operating instructions, with a focus on train length, equipment, track conditions and speed. This assessment was done by a consultant (Rail Sciences) for CN and presented to Transport Canada on November 22, 2005.

CN provided new training for four supervisors who prepared a revised DP training module for use in the ALERT (Advanced Locomotive Engineer Refresher Training) program. All locomotive engineers on this territory received this training. In addition, the four mechanical staff at Vancouver were retrained in DP set-up.

On November 21, following the November 3 derailment at Mile 15, CN issued Operating Bul-

letin 100, which contained the same conventional train handling instructions as Operating Bulletin 92, except that the provision for 18 driving axles on trains handling loaded and empty cars was removed.

Two days after the fourth stringlining derailment, at Mile 57.9 on December 5, Transport Canada ordered CN to limit all freight trains, including those using DP, to a maximum of 80 cars, 6,400 ft. in length and 3,200 tons while operating northbound between Squamish and Clinton. The order also restricted all freight trains to a maximum of 12 locomotive driving axles.

Three days after the order, CN issued Operating Bulletin 103 covering DP-equipped northward trains on the Squamish and Lillooet subdivisions. This restricted such trains to a maximum of 99 cars and a total of 6,000 tons, with loads marshalled as close as possible to the head end of the train; long empty cars in excess of 76 ft. had to be marshalled in the last half of the train; and no more than 3,750 tons may be trailing any empty car that is 76 ft. or more in length.

As for power requirements, all northbound DP trains were to be operated with a maximum of three working locomotives (two head-end and one remote), with the single remote locomotive marshalled at least two-thirds deep in the train from the first rail car, and with the first five cars on either side of the working remote locomotive not to be greater than 76 ft. long.

The bulletin's provisions added that prior to departure from North Vancouver, the locomotive engineer must be provided with confirmation that DP is available and working on the train, and be advised of the marshalled position of the remote locomotive within the train; a running test must be performed prior to departure to ensure the remote locomotive is responding properly; the remote consist must not be placed in "isolate" mode in areas where a communication loss between the lead and remote locomotives is known to occur, such as in long tunnels; and employees must monitor and ensure that communication is restored and verify that the remote consist is responding to commands from the lead locomotive.

Another CN Operating Bulletin issued on December 10 gave instructions for trains in a high throttle position experiencing an imminent and/or unrecoverable stall.

On December 14, Transport Canada revoked its December 7 order, replacing it with a new order that set conditions for all northward freight trains operating between North Vancouver and Lillooet. To be effective for a 60-day trial period, the new order imposed the following conditions in addition to those already in place.

During the trial period, CN would have to issue new or revised operating instructions as mutually required; CN officers would have to ride all trains over the territory; operating crews had to receive on-going mentoring and hands-on training; trains would be provided with a form of exclusive track occupancy to reduce the need to stop; and trains with distributed power would be limited to a maximum of 99 cars and working with two head-end and one remote locomotive.

This order included several measures specifically focused on Train 471. CN had to provide Transport Canada daily a copy of the origin list of each Train 471 operated, and provide each train's event recorder data as soon as possible. Also, CN would have notify Transport Canada 24 hours in advance of each planned operation of Train 471, so that a Railway Safety Inspector could monitor the train for compliance.

The 60-day trial was completed on February 11, 2006, with no incidents occurring, and the December 14 order that had imposed it was revoked on March 6.

At that point, Transport Canada issued a new order, allowing CN to increase the length of its

northbound DP trains from 99 cars to a maximum of 114 cars in the Squamish area. The length of conventional trains operating northbound in that area remained restricted to 80 cars. CN issued Operating Bulletin 17 to incorporate these operational changes.

As of April 2007, the March 6, 2006, order was still in effect. One of its conditions is that any operating instructions, whether new or revised, be agreed on by both Transport Canada and CN. Given the extensive series of orders issued by Transport Canada and CN's compliance in adopting them, the TSB report on the Cheakamus derailment makes no further recommendations on train-handling practices.

It does, however, make recommendations on the use of safety technology and alarm systems.

Prioritize Use of the Safest Technology

The report notes that the train included newer Dash 9 locomotives as well as Dash 8 units, but Dash 8 units were set-up as the controlling lead and remote units. However, the Dash 9 units have a superior display of information for the engineer, and would have shown him the actual power output of the failed slave units. Dash 8 units do not have that capability.

"When the DP failed, had the Dash 9s been marshalled in the lead positions, an indication of a problem would have shown on the tractive effort display, thus providing the crew with the opportunity to take corrective action," the report says.

"The Board is concerned that the railways do not require trains to be marshalled so the safest technology is available to the locomotive engineer."

Locomotive Alarm Systems

The report also noted the limitations of the current fault alarm systems.

"Given the high number and frequency of faults that can activate a TL2 alarm, many of which may indicate somewhat transient or often non-critical information, locomotive engineers can on occasion be presented with a constant stream of non-distinguishable TL2 alarms . . .

"The Board is concerned that locomotive engineers may not be able to differentiate between the many alarms in the cab and as a consequence may not always effectively prioritize the alarms and take corrective action.

"The Board is of the opinion that railways would benefit from working with human factors specialists and locomotive manufacturers to design alarms that will clearly identify the nature of the fault."

The Aftermath

The TSB report is prefaced with the notation that the Board "investigated this occurrence for the purpose of advancing transportation safety. It is not the function of the Board to assign fault or determine civil or criminal liability."

With the TSB report completed, CN still faces consequences from the Cheakamus River derailment, including clean-up costs, charges under environmental laws and lawsuits for damages (see page 37).

It seems this derailment will haunt CN for many years to come.

Ferry Cross the Fraser — While You Still Can

by Duane Cooke

Editor's note: What, some readers will ask, is a story about marine transport doing in a publication focused on railways? Never one to turn down a well-written manuscript, the Editor can cite any number of rationalizations. After all, the Albion Ferry service is a subsidiary of TransLink, no different than SkyTrain and West Coast Express. And speaking of West Coast Express, there are plans in the works for an eventual station at Albion, presumably not too far from the ferry slip.

Going back into history, The Sandhouse *has featured accounts of the lake and riverboats that preceded and later complemented the railways in the province's growing transportation network.*

Another factor can be cited. The sheer proximity of the ferry slip at Albion to the Cascade Subdivision of Canadian Pacific Railway, which allows trainspotting from the ferry and, for those waiting in the line-up on the Albion side, the chance to slip across River Road for a photograph of a passing freight or commuter train. Then, too, there's the irony that the Albion Ferry seems destined to be replaced by a newcomer in the range of TransLink services -- the Golden Ears Bridge.

All told, these seem to be reason enough to record the 50 years of this transportation service that has kept largely out of the limelight for most of its years.

The Albion Ferry service marked its fiftieth anniversary of service on June 3, 2007.

After several false starts dating back as early as 1924, it was on that date in 1957 that the *T'Lagunna* made the first crossing between Fort Langley and Maple Ridge. Today, two modern "K"-class vessels, the *MV Klatawa* and *MV Kulleet,* carry an ever-increasing amount of vehicle and pedestrian traffic across the Fraser River.

The earliest attempts to create a ferry crossing between Maple Ridge on the north bank of the river and Langley on the south side were hampered by difficulties in coordinating the efforts of various levels of governments. In 1924, a Maple Ridge councillor made it known that Mission was asking for a bridge to be built across the Fraser River to Abbotsford (Matsqui), which would free up the ferry used there. It was calculated that it would take 10 minutes for a vessel heading southward and half that time northward (owing to river currents) to make the 1,200-ft. crossing of the Fraser between Hammond and Langley.

Speculation was that the proposal for a Hammond crossing died because Langley had failed to upgrade the wharf on its side.

From the mid-1930s to early 1950s, there ensued more proposals, buck-passing, broken promises and a retired Captain with failing health. Then, in late 1953, proponents of an Albion-Fort Langley crossing were advised to reserve the ferry then operating on the Agassiz-Rosedale run (the *T'Lagunna*).

Finally, on May 9, 1957, the provincial Highways Minister, the Rev. Philip (Flying Phil) Gaglardi, announced that ferry service between Albion and Fort Langley would open on June 1.

Originally named the *MV Agassiz*, the *T'Lagunna* had begun service on the Agassiz-Rosedale crossing in 1931. She worked there for 26 years until moving downstream to Albion, where in 1981 she turned 50 years old and had the distinction of being the oldest operating ferry in British Columbia.
The *Klatawa* was added as a second vessel in 1978 and the *T'Lagunna* was replaced by the *Kulleet* in 1985, though the *T'Lagunna* was used as a back-up vessel until after Expo 86, at which time it was sold.

In 1985, the *Klatawa* gained international fame when she became the first passenger ferry in the world to be converted to run on natural gas. The vessel was also showcased at Expo 86. The *Kulleet* was converted to dual-fuel operation several years later.

The Albion Ferry is a free service -- tolls were removed in 1972. It was operated by the Ministry of Transportation and Highways until 1999, when it was transferred to TransLink (formally the Greater Vancouver Transportation Authority) and given its own identity as Fraser River Marine Transportation Ltd., Albion Ferry Operation, a subsidiary of TransLink.

The *Kulleet* and the *Klatawa* were both built by North Vancouver Shipyards in 1972 and are sisters to other "K"-class vessels in the BC Ferries fleet. Both have a capacity of 25 cars, a

The MV Kulleet *is seen crossing the Fraser River to Albion, as a nine-car eastbound West Coast Express train heads toward Mission on April 5, 2007. Duane Cooke took this photograph looking northeast from the deck of sister vessel* Klatawa.

maximum of 145 passengers and a crew of five. When either vessel is out of service for routine maintenance, quite often the *Kiltsa* acts as a replacement vessel, on loan from BC Ferries.

Sailings operate on a frequency of every 15-30 minutes depending on demand, between the hours of 04:30 and 01:00. It is some 1,200 yards directly across the river from one dock to the other and the trip takes a little over five minutes, depending on tides and river flow.

During peak times, the average wait time for cars varies from three to five sailings. A three-sailing wait can seem like an eternity to some, but when you consider the options -- the price of fuel, coupled with a frustrating 30-mile drive in heavy traffic via the Port Mann Bridge and the Cape Horn interchange -- most prefer the wait.

Service is quite reliable, although it has been suspended because of ice on occasion. Ferry service has shut down only once owing to mechanical reasons. During the first two weeks of June 2007, high water forced temporary weight restrictions (5500kg) for vehicles as the Fraser River swelled close to flood stage.

The ferries are widely used by all types of people. Weekday peak hour sailings accommodate mainly regular commuters -- everyone from sawmill workers to school children. Weekend sailings tend to carry more tourists and day-trippers. Some Lower Mainland residents board the ferry just for a scenic round trip, as this is the only way for them to get out onto the river.

The Albion Ferry also acts as a gateway to historic Fort Langley. It is not uncommon for families to see loved ones off with a suitcase and a hug at the ferry dock -- something that will be lost with a bridge. Even though both vessels have indoor "passenger lounges", most foot passengers prefer to take in the views from outside on the vehicle deck -- even in the rain.

Scenic views from the deck of the Albion Ferry range from river tugboats and their logs in tow to the 10,778-ft. peak of Mt. Baker to the east. A variety of wildlife can be seen along the river, including bald eagles, geese and ducks. Harbour seals swim in the river during fish runs and even mink can be spotted along the shores at Albion.

In 2006, the *Klatawa* and the *Kulleet* transported over 1.5 million vehicles and four million passengers. The service is increasing in popularity, though the numbers also show an increasing demand for a crossing with a greater capacity.

Several miles downstream, concrete towers have begun to rise out of the river, destined to become part of the new Golden Ears toll bridge. The new, sleek looking six-lane span is scheduled for completion within the next two years and all indicators suddenly point to the end of ferry service on the lower Fraser River.

If you haven't taken the Albion Ferry yet, now is the time. Fifty years of service and tradition on the Fraser River will likely come to an end shortly after the first few cars drive across the new bridge when it opens in 2009.

A pictorial website covering the Albion Ferry and other river services can be found at http://fraserferries.fotopic.net/

SHORT HAULS

The Events of Today are the History of Tomorrow

Three more ex-BC Rail units have been retired. CRS-20 switcher 621 was withdrawn on June 1, with sisters 619 and 620 following on June 29.

This brings the number of ex-BC Rail units retired by CN to 38.

Meanwhile, B36-7 units 3607 and 3609, which were retired earlier, have been sold to the U.S. firm Progress Rail Services. (*Branchline*)

The Cheakamus derailment continues to haunt CN, two years after it occurred on August 5, 2005.

CN faces fines of up to $5 million after being charged with two counts under the federal Fisheries Act and three counts under the B.C. Environmental Management Act. The case goes to court on October 3.

The charges stem from the spill of caustic soda from a single tank car that killed more than 500,000 fish, about 90% of the total in the Cheakamus River system (see pages 20-33).

CN has already been assessed more than $200,000 in clean-up costs by the B.C. government and has voluntarily committed $1.25 million to efforts to restoring the salmon population in Squamish area rivers, which were already under way before the accident.
But the costs could mount further. The railway faces lawsuits by the Squamish native band and a sport-fishing operator affected by the loss of fish.

Fisheries research has identified some good news. The spill killed off species of coarse fish that normally prey on young salmon. Also, the steelhead currently in the migration cycle that takes them into the Pacific Ocean for several years are enjoying a greater survival rate out at sea than is normal. The combined result of these findings is that the some species could be restored within 10 years, and not 50 as feared. (*Globe and Mail/Vancouver Sun*)

A fiery derailment in Prince George put CN and its safety record back in the news, just one day shy of the second anniversary of the Cheakamus accident.

At about 10:30 on August 4, a yard switching movement with three units and 53 cars derailed beside the Fraser River after a side-swipe collision with the middle of inbound Train 357 on the adjacent track. A lumber car derailed on one train, and two tank cars loaded with gasoline derailed on the other train, starting a fire that ignited the spilled lumber and burned until 05:00 the next day.

Firefighting aircraft were called in to douse the blaze with chemicals. There were no injuries.

GP9RM unit CN 7222 was leading the switching movement and derailed onto the riverbank. The fire damaged GP9 slug unit CN 256 and destroyed GP9RM CN 7043.

The switching movement was being operated by remote-control by a management employee who had previously performed the same duties while

in a unionized job, CN said. The railway blamed the incident on human error, after conducting an internal investigation.

Four days after the event, the federal Transportation Safety Board announced it would carry out a full-fledged investigation. Most rail accidents do not warrant such an investigation -- in 2005/06, the most recent full year for which statistics are available, the TSB investigated 79 incidents out of about 4,000 reported to it.

Although it was initially claimed the derailment had caused no environmental damage, the B.C. environment ministry issued an order on August 21, giving CN three days to submit a clean-up plan, after the discovery that hydrocarbons were seeping into the river.
(*Prince George Free Press/Vancouver Sun/Globe & Mail*/CBC Radio)

A yard accident in Quesnel on August 21 saw 10 empty centrebeam flatcars derailing. Some left the tracks on the inside of a curve and flipped on to their sides and others were leaning at sharp angles inside the through-truss bridge across the Quesnel River. There were no injuries or environmental damage, but the incident added to the negative headlines involving CN. (CBC)

CN has 130 new locomotives on order, for delivery over the next 12 months.

Arriving on the property between August and October will be 50 SD70M-2 units from Electro-Motive Diesel in London, Ont., as reported in the Summer 2006 edition (page 35). CN placed an order in June for another 25 of these, to be delivered in August 2008.

Also coming are 15 ES44DC units from GE Transportation Rail in Erie, Pa., slated for delivery in November. In June, CN ordered another 40 of these locomotives, for delivery between December and next February.

All 130 will be equipped for remote-control operation of unmanned midtrain and tail-end slave units. The two earlier orders will accommodate an increase in traffic, especially with the Prince Rupert container terminal starting up. The two June orders will enable CN to retire 145 older units. (CN)

Flooding submerged CN's North Line west of Smithers in early June, as the Skeena River overflowed its banks owing to spring run-off and heavy rainfall.

Operations west of Smithers on the Bulkley and Skeena subdivisions were suspended as of 20:50 on June 4, effectively severing traffic to and from the port of Prince Rupert for nearly a week, including VIA's Skeena passenger service (see VIA section).

The Bulkley Sub. was passable by 08:00 on June 10, and the Skeena Sub. was re-opened by 06:00 on June 11. (CN)

CN 5000, the railway's original SD40, has met a sad end. Previously reported to have been donated to the Alberta Railway Museum, the locomotive was seen on August 16 in the Lac la Biche yard of the Athabasca Northern Railway, with just the cab sitting atop the frame, and the fuel tank intact below. Other parts were sitting on the ground nearby.

It had been retired on December 18 last year, marking the disappearance of that class in its original form from CN's roster, although many rebuilt units remain (see Autumn 2006 issue, page 34). (Trevor Sokolan)

CN is being sued by Mitsubishi Heavy Industries of Japan for damage to a section of an aircraft fuselage in a derailment on July 1, 2005, near Avola, B.C., on the Clearwater Subdivision.

Mitsubishi says one of three centre fuselage mid-barrel sections being shipped on the train was a total loss. It is claiming $1.65 million in a

B.C. Supreme Court action.

The fuselage sections were destined for Downsview, Ont., for assembly in Dash-8-400 aircraft. (*Business in Vancouver*)

CANADIAN PACIFIC

A three-week strike by track crews on CP this spring was settled with the help of a federally appointed mediator.

CP agreed to wage increases of 3%, 4% and 3% covering 2007 through 2009, even though this broke the pattern established in earlier contracts with other unions. CP had originally offered 10% over the three years. The 3,200 track workers could also receive a further 1% annually from the union's employment security fund, to which the company contributes.

Another concession by CP was to drop expansion of the travel zones that track workers are expected to cover to reach job sites, travelling unpaid but at company expense for vehicle mileage.
The deal with the Teamsters Canada Rail Conference was reached June 6, following a strike that began May 15. CP put 1,300 managers into track maintenance roles to carry out essential work, but improvement projects were postponed.

Picketing at CP's Vancouver Intermodal Facility in Pitt Meadows led to truck drivers refusing to enter, resulting in a backlog of container traffic. After CP won a court injunction to prohibit picketers from stopping trucks at this site, a scuffle resulted in six picketers being arrested by CP Police after blocking a truck. Charges were later dropped, but the union filed a civil suit against CP. (*National Post/Globe & Mail/Vancouver Sun*)

Imitating CN's methods is part of CP chief executive Fred Green's plan for improving the railway's efficiency.

Speaking at a transportation conference in New York on May 8, Green noted that CP's 2006 operating ratio of 75.4% was far behind CN's figure of 60.7%. A lower number is better, since the ratio measures how much a railway has to spend to earn a dollar in revenue -- in CN's case, 60.7 cents to bring in a dollar.

Both railways have done steadily better in recent years, but CN leads the industry in North America, while CP is a distant second, just ahead of BNSF. In fact, the ratio achieved by CP in 2006 was already bettered by CN in 1998 when it hit 75.3%, and that figure has continued to drop.

"We're at a point where probably CN was a number of years ago," said Green. "I'm not proud. To the extent we can steal all of their best ideas and implement them, we shall do that as fast as we possibly can." (*National Post*)

An attempt to purchase CPR has fallen through in the wake of the global credit squeeze that erupted in August.

Toronto-based Brookfield Asset Management Inc. had reportedly been attempting to raise fi-

nancing to enable it to buy CPR in a private-equity deal that would have cost upward of $15 billion, with Brookfield needing to borrow at least $8 billion to finance the transaction. With credit on that scale drying up, Brookfield has apparently shelved its plans.

On July 18, CPR confirmed that it had received an overture from Brookfield earlier this year, but had rejected the proposal.

CPR's acknowledgement that it had received a proposal from Brookfield drove up its share price to $91 on July 18, but by the time Brookfield withdrew in mid-August, that had dropped to $70. At that price, the value of outstanding shares was $10.8 billion. (*Globe & Mail*)

A motive power shortage has prompted CP to lease 50 units from National Railway Equipment for six months. The first units to arrive in late August were NREX 5074, 5081 and 5082 (former UP SD50 units of the same numbers), NREX 5668 (ex-CP SD40-2 5668) and NREX 6481 (ex-BNSF SD45-2 6481). (Bill Miller)

A new overpass in Langley provides another spot for photographing trains.

Opened on May 13, the overpass takes 204th Street over CP's Page Subdivision, which carries CP and CN coal and container trains to and from Roberts Bank, and Southern Railway of B.C. freights.

Built at a cost of $18 million, the new bridge has a pedestrian ramp from Duncan Way on the south side of the railway, which gives a good view of westbound trains.

More overpasses are going to be built as part of the Roberts Bank Rail Corridor project under the federal-provincial Asia-Pacific Gateway strategy (see Port News). (Mark Williams)

CP 2816's only Vancouver visit of this year was in early July, on a special chartered by the luxury British tour firm, GW Travel.

Using cars from the Royal Canadian Pacific fleet, the charter left Calgary on July 2, making overnight stops in Lake Louise (two nights), Revelstoke, and Kamloops before reaching Vancouver on July 6. It departed eastbound on July 9, overnighting in the same pattern, and arrived at Calgary on July 13. (Ken Storey)

A woman was killed while photographing a train at Haney on June 24.

The 21-year-old Mission resident died of head injuries after being struck by the leading unit of an eastbound CP freight, just west of the West Coast Express station at Port Haney. She and her boyfriend had been photographing the train as it approached. (*Vancouver Sun*)

The portable Huntingdon yard office was removed in late winter, leaving no shelter of any kind at the yard, which lies immediately north of the Canada-U.S. border. The portable building had been installed in 2000, replacing the original CP depot on the same site, about 100 ft. north of the border at MP 10.1 of the Mission Subdivision. See the December 2000 issue, pages 42-43, for photos of both structures. (Editor/John Cowan)

Three black bear cubs have taken to riding CP's grain trains across the Great Divide. A news report in June said the mother bear and cubs had hopped on to the open platform of a stationary grain hopper to eat the spilled morsels scattered there. When the train began moving, the mother hopped off but the cubs stayed aboard. When they were discovered they were returned to their mother, but two days later took another ride and again had to be removed.

Yoho National Park officials believe the bears were hungry after a long hibernation.

A few days after that report came news that a grizzly sow had been killed by a CP train near Banff, and her two orphaned cubs met the same fate in a separate incident a few hours later.

Grain spillage attracting wildlife to the tracks has been a longstanding problem for the railways, with CP going so far as to deploy a large road-and-rail vacuum truck to suck up spills (see photo, page 36, Summer 2002 issue). (CBC News/*Vancouver Sun*)

The new alignment at Cloverdale went into service on July 3, when the eastbound Valley Turn took the route at 04:27, returning after 08:00.

The last train over the old alignment was a westbound freight led by SRY 384, which passed through Cloverdale at about 19:15 on July 2.

At its eastern end, the realignment begins about 200 yards west of the point where Southern Railway's track connects to the Roberts Bank

The realigned SRY track at Cloverdale is taking shape in this view looking west from the new Highway 15 overpass on June 7. The coal train at left is on BC Rail's Port Subdivision at Pratt siding . *(BIP project photo)*

line. From there, the new alignment runs west for about 1.25 miles, passing beneath the Highway 15 overpass. It then shifts over to the original alignment at about 0.8 miles before the crossing of Highway 10.

The realignment eliminates grade crossings at busy Highway 15 and at 176th Street. The project was funded by the federal and B.C. governments under the Border Infrastructure Program (BIP), which is aimed at improving the cross-border flow of goods through the Lower Mainland's four border crossings. The work includes a parallel two-lane Highway 15 overpass above the BC Rail Port Subdivision and SRY tracks, on the west side of the original overpass.

As a result of the change, the SRY line no longer passes the site where B.C. Electric Railway's Cloverdale station once stood, beside the original alignment built 96 years earlier. (A.J. Shewan/Henry Ewert/BIP)

Rolling Stock

Saskatchewan's fleet of grain hoppers is getting a bold and colourful look.

The cylindrical hoppers are being painted in a vibrant green with the word "Saskatchewan!" running the full length of the car in large letters. The cars also wear a bold red decal of the provincial flower, the prairie lily, and a golden yellow stripe depicting the wheat and canola fields.

The fleet was built for the Saskatchewan Grain Car Corp. in 1981. Repainting of the first 100 cars was carried out by GE Railcar Repair Service Co. of Regina. The new paint job is expected to last for the rest of the cars' expected 50-year service life.
Farmers do not pay SGCC for use of the cars when shipping statutory grain to west coast ports for export, thereby saving $4.50 per tonne. (SGCC)

Industrial Lines

Pacific Elevators is trying out GMD1u switcher 1204 from Southern Railway of B.C., with the unit taking up its trial duties at the end of June. Could this spell the end for the three British-built 0-4-0 Hunslet switchers acquired between 1968 and 1974? (Duane Cooke)

A commuter demonstration run was operated on May 30 between Langford and Victoria, using two Budd RDC cars (6148-6133). The train departed Langford at 07:00, arriving in Victoria at 07:25, well in time for its normal 08:00 departure for Courtenay on VIA Rail's Malahat service.

Various local politicians were on board, as well as genuine commuters. For a fare of $10, passengers received a coffee and a bus ticket for the afternoon trip home.

A similar trial took place on June 5, 2002, which was also Clean Air Day as with this year's event. (*Saanich News/WCRA News*)

RDC-1 6135 returned to Vancouver Island on August 13 after being fitted with toilet retention tanks in Moncton, N.B., along with repairs to a damaged truck. (John Cowan)

Skeena service was interrupted by flooding on CN's Bulkley and Skeena Subdivi-

sions between Terrace and Prince Rupert, with no trains operating west of Prince George. The westbound train from Jasper was terminated at Prince George on June 6, 8 and 10. On the three following days, the eastbound train to Jasper originated in Prince George. (VIA)

VIA averted a strike when it reached a last-minute tentative settlement with the Canadian Auto Workers union, representing on-train staff, maintenance and office workers. The union was set to start striking on June 22 before the proposed three-year deal was reached. (VIA)

ROCKY MOUNTAINEER Vacations™

The Whistler Mountaineer has operated with unusual locomotive combinations this year, after starting the season on May 1 with its dedicated GP40-2 units, RMR 8018-8019.

That combination lasted into June, when 8018 was taken out of service for work at Southern Railway of B.C.'s Trapp Shops in New Westminster. West Coast Railway Association's FP7A unit, WCXX 4069, was pressed into service as the trailing unit to 8019, a combination that had operated for most of the train's first

There's no doubt where this grain hopper comes from. Saskatchewan Grain Car Corp.'s SKPX 625100 wears the new livery being applied to the government-owned fleet, seen here on CP near Booth, B.C., on August 5. (Photo by Ian Smith)

season in 2006.

But 8019 encountered engine problems on June 27, and the southbound train arrived two hours, 20 minutes late at North Vancouver, with CN SD60F 5549 leading 8019 and 4069. The next day, 5549-4069 handled the train alone, marking the first time the Whistler Mountaineer has operated without one of its specially painted locomotives in the consist.

RMR 8018 was hurried back from Trapp Shops on June 28, but electrical issues kept it sidelined and 5549-4069 continued to work the train until July 1, when 8018 was mated with 4069.

On July 14, 8019 was back in service with 8018, and the pair dropped off WCXX 4069 at the WCRA's Heritage Park while on the northbound run. (Corwin Doeksen/Mark Forseille)

Parking lot fees are being raised for the first time since West Coast Express began operation on November 1, 1995.

The fee has always been $1 for a single day or $15 for a month (which effectively means 22 weekdays). As of September 1, the daily fee will double to $2 and the monthly fee will jump to $40.

WCE says parking fee revenue of about $304,000 annually has not kept pace with the cost of maintaining the lots and servicing the ticketing machines, which is out-sourced to Imperial Parking.

Along with the increase, WCE is introducing a "pay by phone" scheme for parking, which is aimed at encouraging paying on a day-to-day basis. Those who pay by phone will avoid the queues at the pay-parking machines. WCE notes that holding a monthly parking pass does not guarantee a space every day.

There are about 1,900 spaces in total in the parking lots at six WCE stations, the exceptions being Port Haney and Waterfront. Some are regularly filled to capacity. (WCE/*Vancouver Sun*)

New TrainBus services are going into operation on September 4.

There will be two morning departures from Mission to Waterfront Station, at 09:27 and 10:27, instead of the previous single departure at 09:30. Running time for the morning runs is estimated at one hour, 55 minutes.

Departures from Waterfront Station to Mission will leave at 13:25, 19:00 and 20:00. The previous service had just one eastbound run, at 19:20. The eastbound runs are timed at an estimated one hour, 42 minutes.

Trains make the run in 73 minutes in either direction. (WCE)

Amtrak

Use of Superliner cars on Amtrak's Seattle-Vancouver, B.C., service is expected to continue until May 2008.

Originally, substitution of these bilevel cars for the usual Talgo trainset was only intended to last from April 10 to June 18 (see previous issue, pages 39-40). However, repairs to the Amtrak Cascades Talgo fleet are taking longer than expected. (Terry Muirhead)

Preservation

Downtown Historic Railway service was suspended for this year's operating season, owing to construction of the Olympic Village adjacent to DHR's track along West First Ave.

DHR's prefabricated carbarn was disassembled and its cars (ex-BCER 1207 and 1231, and ex-Brussels 4) were stored in a historic industrial building just west of the barn at West First and Manitoba Street (see the Winter 2006/07 issue, page 12, for a photo of 1231 passing that very building). (Steve Goodman)

Port News

A $360-million upgrade of the Roberts Bank Rail Corridor has taken a major step forward, with the final commitment of funds announced on June 28.

The initiative, part of the federal-provincial Asia-Pacific Gateway strategy, will see nine grade separation projects between Delta and Langley on the BC Rail Port Subdivision and CP Page Subdivision.

The first two involve Mufford Crescent and 64th Avenue in Langley and 152nd Street in Surrey. Others will be at 41B Street and 80 Street in Delta, 168th Street and 192nd Street in Surrey, 54th Avenue and 196th Street in Surrey / Langley, and 232nd Street in Langley. Work could take up to eight years to complete and is subject to environmental and land-use approvals.

Numerous parties will fund the projects -- the federal government ($75 million), the B.C. government ($50 million), the Vancouver Port Authority ($50 million), TransLink ($50 million), the municipalities of Delta, Surrey, Langley City and Langley Township ($50 million combined), and CP, CN, BNSF and the British Columbia Railway Co. ($32 million combined).

The railways will also invest $60 million in capacity improvements, such as the westward extension of the BCR Pratt siding in Cloverdale and the CN Rawlison Subdivision in Langley. (Transport Canada/*Vancouver Sun*)

Prince Rupert's container port is nearing completion, with three super-post-Panamax cranes arriving by sea from China on August 21. At 80 metres — or 25 storeys — high, the cranes will be the tallest structures in Prince Rupert. (*Vancouver Sun*)

Overseas

Captain George Vancouver has been commemorated with the naming of a British four-car electric multiple unit train in his honour. The British train operating company First Capital Connect, which operates commuter services to the north and south of London, has named the first of its refurbished Class 365 sets "Captain George Vancouver".

Cast aluminum nameplates on the side of unit 365514 were unveiled on June 22, the 250th anniversary of Vancouver's birth, in a ceremony at his birthplace, King's Lynn, Norfolk. Railfans soon took to calling the unit "Captain George".

This is not the first time the 18th-century seafarer has been recognized in this manner. Virgin Trains gave the name "George Vancouver" to high-speed Super Voyager diesel multiple unit 221129, in keeping with naming most of the 44-strong class after famous explorers. (Paul Jeffries/*Railway Magazine*)

THE SANDHOUSE

THE SANDHOUSE is normally published once each quarter, in Spring, Summer, Autumn and Winter, and mailed to paid-up members. Copies can also be purchased from the following retail outlets:

Central Hobbies, 2845 Grandview Hwy., Vancouver (604) 431-0771
Kelly's Kaboose, 634 Victoria St., Kamloops (250) 377-8510
Victoria Scale Rail, 3595 Ravine Way, Victoria (250) 475-2860

All contributions are gratefully received, but are subject to editing. Please send all news items, photos and articles to the Editor, care of the Division address (see page 2).

Ian Smith — Editor

Parting Shot

Lighting and a telephoto lens create a surrealistic view through the bored tunnel for the Canada Line's southbound track. (Canada Line Project photo)

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WE INVITE YOU TO JOIN US

Get together with fellow railway enthusiasts and take part in the varied activities of the CRHA's Pacific Coast Division.

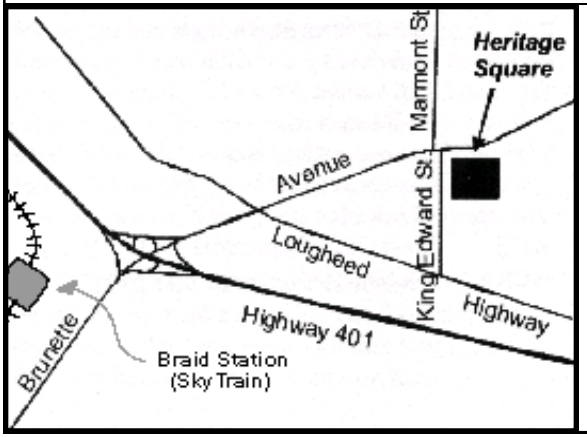
We meet nine times a year on the 3rd Thursday of the month (see below)

- Meetings feature slide shows, video programs, talks by railway officials and writers on railway subjects, and the opportunity to socialize with other railway enthusiasts.
- We publish **THE SANDHOUSE**, a quarterly journal on B.C. railway matters. Membership dues include a subscription.
- We operate a museum in the preserved Fraser Mills CPR station at Heritage Square.
- We're restoring a CP Rail caboose at Heritage Square.
- We organize field trips to local railway facilities and explore sites of historical interest.

We hope you'll join us. Please send your address details (name, full address, phone number, e-mail), together with your payment, to our postal address or bring it to one of our regular meetings.

Annual dues are: $20 for Canadian residents; $30 for U.S. and Overseas ($20 if paid in U.S. funds)

Website address: http://www.freewebs.com/sandhouse/index.htm



Pacific Coast Division's regular meetings are held on the third Thursday of each month (except July, August and December) at

Heritage Square, Place Des Arts
1120 Brunette Avenue
Coquitlam, B.C.

Informal socializing starts at 7:00 p.m.
Presentations begin at 7:30 p.m.

Quiet on the Set and . . . Action!