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CP Rail Considers Electrification

Canadian Pacific is considering the possibilities of the electrification of its main line in the Rockies from Calgary to Vancouver. This exciting development was revealed by S. M. Gossage of Canadian Pacific in testimony to the Canadian Transport Commission.

Electrification is being considered by CP Rail as the way to increase the carrying capacity of its main line through the Rockies in order to meet projected increases in coal and other mineral traffic that will tax the capacity of the line to the hilt if the increases in the minerals traffic prove true. Sometime before the end of this year, the railway will make the decision on whether to go ahead and electrify 641 miles of main line between Calgary and Vancouver, and 223 miles of branch line (to the coal fields) which connects with the main line at Golden, British Columbia. A feasibility study is currently underway to assess the economics of the electrification.

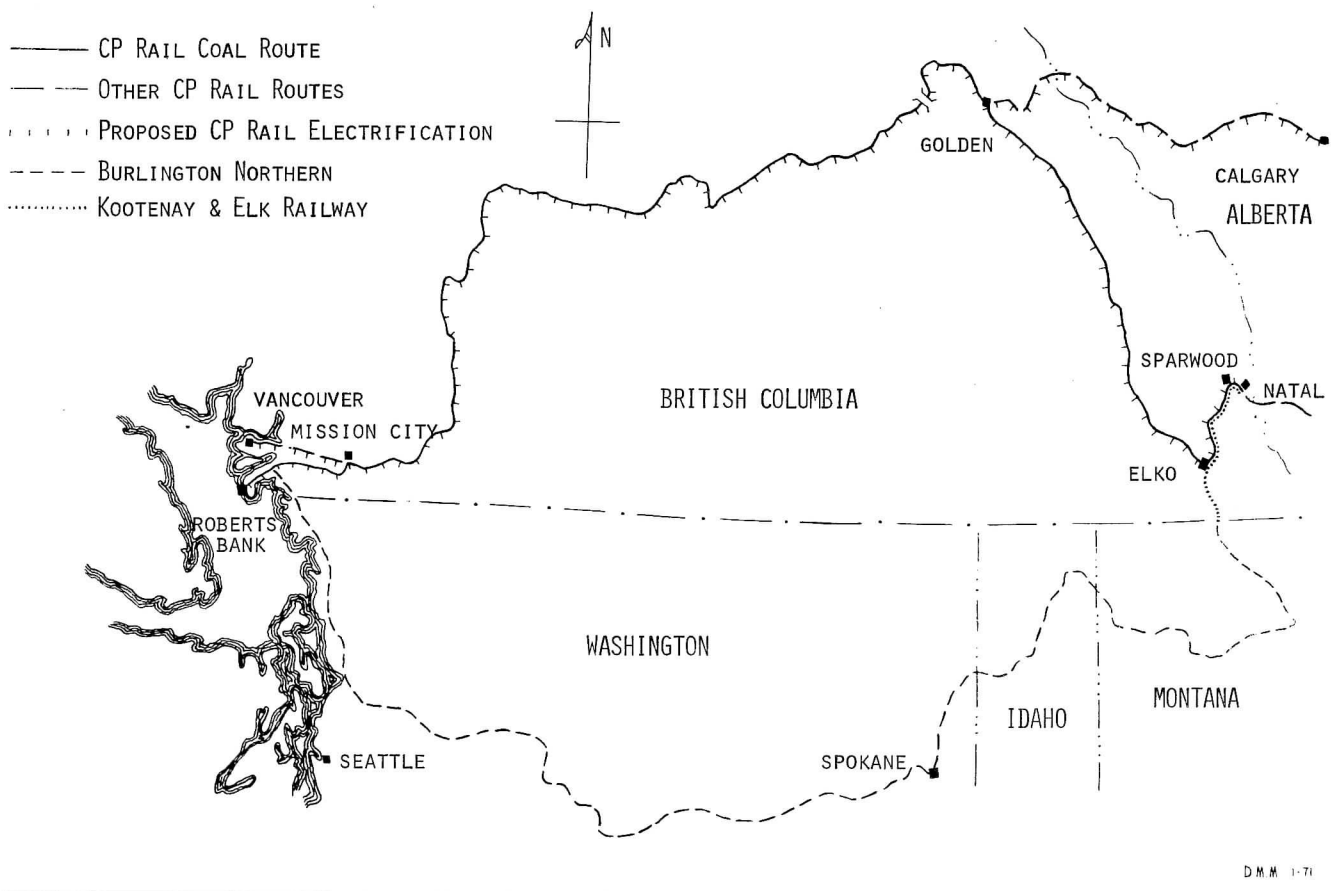
Contemplated is the installation of 25-kilovolt AC catenary, using high horsepower (4000 hp. or greater) solid state rectifier locomotives as the prime movers on solid unit trains of coal, potash and sulphur. With up to five fold increases in bulk exports funnelling through the Rockies to tidewater contemplated by both railways in the next ten years, CP Rail considers that electrification will speed up the movement of traffic on its line. Electrification becomes economically feasible with the coming increases in traffic and the use of high voltage AC solid state rectifier electric locomotives to speed the traffic. Such locomotives have fewer working parts and are substantially more reliable and easier to maintain than diesels.

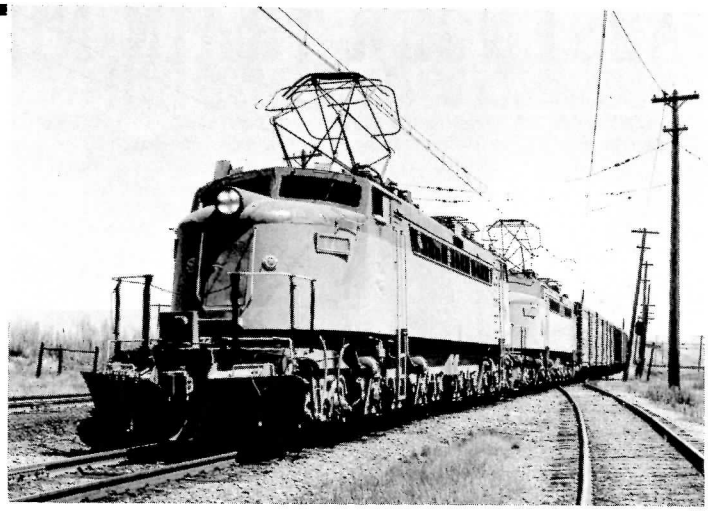
At the present time, CP Rail pushes slightly more than nine through trains daily across the mountains to the coast. To meet the anticipated traffic expansion it plans to put through almost 17 diesel powered trains a day by 1980 and even more could be scheduled if the line is electrified.

Along with electric locomotives, the railway is seriously considering another method of increasing the capacity of the single track main that winds through tunnels and up steep grades across the continental divide between Revelstoke and Golden. This is the use of a super gondola car--a 66-foot 150-ton monster supported on two six-axle trucks. These cars, coupled in 105-car unit trains, would add one-third to the payload and would be whisked through just as fast as a lighter train using diesels--and even faster using electrics.

CP Rail's line from Vancouver to Calgary and the spur to the coal fields from Golden cross some of the toughest terrain in North America, with the line rising at one point to 3700 feet above sea level. The line is all single track, except for passing sidings, and the task of maintaining uninterrupted traffic while electrification work was in progress would pose massive problems. No other railroad has attempted electrification on such a scale in such rugged country since World War II.

The 25 kilovolt AC electrification by British Rail between London and Merseyside during the 1960's cost $302,000 for each mile of single track. Given this as a cost figure, CP Rail's proposed electrification would cost $260.9-million, which is half of what the railway earned in passenger and freight revenues in 1969. The cost figure for the CP Rail electrification will be greater, since the British were faced with fairly level track, could gain access to it by road at almost any point, and could divert traffic so as to give engineers continuous possession of the track.





Will the CMStP&P electrification have a neighbour to the north? GE-built "Little Joe" E21 heads a sister on a freight westward out of Butte, Montana. (David More)

The only other long distance electrification remaining in the Rockies is the 640 miles of the Chicago, Milwaukee, St. Paul & Pacific Railroad 3400 volt DC catenary between Tacoma, Washington and Harlowton, Montana. This mileage is broken into two sections, with a 216-mile gap of dieselized operation between Othello, Washington and Avery, Idaho. A study has been made of whether to rip out the existing catenary, installed between 1916 and 1920, or upgrade electric equipment and span the 216-mile gap.

The outcome of the Canadian Transport Commission hearings on the Kootenay & Elk Railway Co.'s application to construct a line to haul coal from the fields around Sparwood, British Columbia to a connection with the Burlington Northern at Roosville on the United States border will have a definite impact on CP Rail's decision on whether or not to proceed with electrification.

Proceedings before the CTC railway committee in Ottawa on January 15th have threatened to turn the K&E application into a constitutional issue. Canadian Pacific counsel E. E. Saunders charged that Kootenay & Elk is not a properly incorporated company because the British Columbia government has no legal jurisdiction over the railway. Under the British North America Act, the provinces have jurisdiction over local railways only. Citing a battery of legal precedents, Mr. Saunders attempted to show that because the K&E would join an American line, the federal, not the provincial government, has jurisdiction. He also cited evidence admitted earlier in the hearing that without Burlington Northern's part in the scheme, the Kootenay & Elk line "could be built, but it would serve no purpose." The fact that Burlington Northern is necessary to the success of the Kootenay & Elk plan "is almost proof in itself that Kootenay & Elk is not a local undertaking," he said.

A vital point in the hearings of the CTC is the concern of the Japanese steel-making industry that a lack of sufficient coking coal for its furnaces will prevent expansion beyong the 140-160 million tons annually which is projected for 1975.

The emergence of this touchy constitutional issue has forced the Kootenay & Elk railway hearings into extra innings, probably during March. Chairman Pierre Taschereau of the CTC's railway committee, citing the existence of considerable public interest in the case, told the hearing January 15th that the legal standing and, therefore, constitutionality of the Kootenay & Elk Railway Co. will be considered in detail by the committee at a later date. Now, no matter in whose favour the committee rules, the case is considered likely to end up in the Supreme Court of Canada because the authority of either the Federal Government or the Province of British Columbia will be challenged.

It is of interest to compare the physical characteristics of the two competing lines of CP Rail and K&E-BN in the haulage of coal to tidewater at Roberts Bank.

CP Rail describes its 692-mile haul from Sparwood to Roberts Bank as the toughest railroading of its type in North America. The CP Rail route is speared by the Selkirk range, which carries the line to a summit of over 3700 feet. CP Rail unit coal trains (there are three in service) make the round trip of 1384 miles in 72 hours, taking on and shedding extra power as the grade stiffens or eases. To haul a laden 88-car unit train, carrying 9000 tons of coal, westwards over the Selkirks, on a rising grade of 2.2%, requires eleven diesels. This impressive assembly of motive power can put out a whopping total of 33,000 h.p.

Engines are run at the head, spliced in the middle and positioned at the rear of trains tackling the summit. The all-up weight of trains during this part of their journey is 14,000 tons. By contrast, the same 88-car trains require only four diesels to amble them across the flat alluvial plain of the lower Fraser Valley.

By 1972 CP Rail will be moving a unit train a day for Fording Coal Ltd., in addition to the unit trains now running for Kaiser Resources Ltd.

If the Kootenay & Elk is granted running rights over existing CP Rail trackage between Sparwood and Elko it will only have to build 28 miles of new line south to connect with the Burlington Northern at the border. If it has to construct a new line throughout it will have to lay 66 miles of track. As well as the above applications, the K&E, in concert with BN, is applying for permission to carry coal to Roberts Bank. This involves 10 miles of new trackage on the U.S. side of the border to link with existing BN rails.

Originally the K&E and its U.S. partner offered an alternative route of almost similar length as CP Rail's and with easier grades. The K&E-BN proposed that trains travel 701 miles over a line dominated by a summit several hundred feet below that faced by CP Rail, to reach Everett, Washington, and then return to Canada and Roberts Bank. The highest point they faced was at the eastern entrance to a long tunnel piercing the Cascade Range at 2900 feet.

However, last November, BN abandoned 73.84 miles of trackage south of Roosville West to skirt the new Libby Dam reservoir of the Kootenay River. By this move, BN, at the cost of a seven-mile tunnel and a new 3692-foot summit, has lopped 14.53 miles off its main line. But the switch puts a kink into the proposed K&E-BN coal line and extends its mileage to 731. Further, the composite route is now less favourably placed as to grades.

The line revision means that the K&E-BN route has a summit only 443 below that of CP Rail and offers 8.5 miles of grade in excess of 2% as against CP Rail's 10 miles of similar grade. On the other hand the southern route is 39 miles longer than that of its northern competitor. But the K&E-BN partnership is claiming that operating differences should be considered as well as the physical nature of the lines.

The allies say that the CP Rail route is too heavily trafficked (22 trains a day) to be able reliably to deal with a major upsurge in the coal carrying business. They point to BN's main line (eight trains a day) as well capable of meeting fresh traffic. Further they claim that theirs is the faster route, with freights freights permitted in places to go up to 60 mph. By comparison freight trains on the CP Rail line are held to 50 mph.