CHAPTER 7

PORTS AND TERMINALS

PORTS AND TERMINALS

Throughout the hearings, producers expressed concern that problems at export grain terminals and ports may have a more detrimental effect on the ability of Canada to meet export opportunities than the prairie system. The Commission examined the facilities and operations at Thunder Bay, Churchill, Prince Rupert, and Vancouver to gain an understanding of possible constraints and opportunities.

It appears to the Commission that there are some evident features which either cause current constraints to the efficient operation of some of the ports or pending problems which can be avoided by taking immediate action. These are the items upon which the Commission makes comment.

Thunder Bay

When the Canadian Pacific Railway joined Canada's prairies to Thunder Bay on Lake Superior in 1882, it immediately began to build a terminal to transfer grain from rail to ship. Christened "The King" a 350 thousand bushel terminal was finished in time to handle the 1884 crop. As the flow of grain from the prairies increased, Canadian Pacific Railways built four more terminals between 1885 and 1902. When the Canadian Northern Railway arrived at the port in 1900, it built a 1,250,000 bushel terminal. Between 1900 and 1930, terminal elevator construction at Thunder Bay continued at a fast pace.

TABLE VII-1
Grain Terminals and Capacities - Thunder Bay, 1900-1976

Year	Number of Terminals	Storage Capacity (bushels)
1900	5	5,565,000
1910	15	25,700,000
1920	18	49,500,000
1930	26	83,700,000
1976	17	90,400,000

Thunder Bay is the key port in the entire eastward grain handling and transportation system. The operations at Thunder Bay have a direct bearing on the activities and operations of all eastern grain ports. Thunder Bay provides the surge storage capacity and grain cleaning facilities for all grains moved east thereof, either to export or for domestic consumption. Operations at Thunder Bay are of a seasonal nature. Drastically reduced volumes of grain move out of Thunder Bay when navigation on the Great Lakes is closed from approximately late December to early April. There is some movement of grain by rail to the eastern domestic feed market during all months, however, the heavier movement occurs during the winter months when navigation on the lakes is closed.

A large proportion of the grain shipped from Thunder Bay moves by lake vessel to the St. Lawrence ports. Less than 10 percent of Canadian exports through the east coast move directly overseas from Thunder Bay.

TABLE VII-2
Exports of Canadian Grain (thousands of bushels)

Crop Year	Total of Exports through the East Coast	Exports direct from Thunder Bay
1967-68	158,377	20,750
1968-69	116,661	12,343
1969-70	216,980	10,593
1970-71	377,704	42,231
1971-72	441,168	45,819
1972-73	408,037	36,746
1973-74	291,376	20,179
1974-75	300,105	31,645

Historically, Thunder Bay has been classified the "Canadian Lakehead", the western terminus of the St. Lawrence - Great Lakes Seaway. Thunder Bay serves as the junction point between the overland transportation system of Western Canada and the water transportation system of Eastern Canada. Naturally, this location has led to the development of terminal elevators for the transloading of grain from rail to ship and is currently gaining an importance as a transloading point for coal and petroleum industry products as well.

The importance of Thunder Bay to Western Canada's grain handling is indicated by virtue of the fact that the 17 terminals have a capacity of some 90.3 million bushels of Canada's total 237 million bushel terminal capacity on water. Thunder Bay is widely known as one of the greatest grain handling ports in the world. The port is capable of accommodating both lakers and ocean going vessels and handles approximately two-thirds of Western Canada's grain shipment or some 475 million bushels annually over the past decade.

Although Thunder Bay has adequate capacity to handle all of the grain which it is currently being called upon to handle, changing circumstances will very soon affect the efficiency of this port unless remedial action is taken.

These circumstances are:

1) silting in the river terminal areas and in the slips and harbour generally;
2) the increasing size and draft of the grain carriers;
3) the increasing rail traffic caused by coal, potash, iron ore and wood product haulage;
4) obsolescence of some terminals in view of changing circumstances.

The terminals on the Kaministikwia River are being phased out of operation largely due to environmental regulations and pressures which have prevented economical dredging. Even with this reduction in capacity, the port will continue to be able to handle its share of the grain without difficulty. However, the reduced capacity does necessitate a more rapid turnover.

The silting problem is such that it is currently often necessary to shift vessels several times to terminals or slips with greater draft in order to fully load out. This process is effectively managed by the Lake Shippers Association; however, there is a limit to the extent to which the problem can be alleviated in this manner. Although the major concern is with the terminals remaining on the river, silting is also a problem in some of the slips. Part of the silting problem is due to the fact that environmental interests will not allow the dumping of contaminated silt anywhere else in the lake and difficulty is being experienced in locating inland dumping areas. There has been no significant dredging for three years. This is becoming a major concern and action must be taken soon before serious limitations are imposed on the operating efficiency of the port.

The servicing of various terminals by the two railways is opposite or in direct conflict with the deliveries by the railways. That is, currently some 54 percent of the grain delivered to Thunder Bay is picked up in the country by CP Rail while terminals serviced by CP Rail amount to some 43 percent. Likewise the opposite holds true for Canadian National.

The pooling of board grains has helped the switching and co-ordination problem considerably, but the possibility of a slight change in the servicin

of terminals by the railways to reflect country pick-ups appears to be a course which should be examined in the interests of enhanced efficiency.

Another area of concern is the co-ordination of unloads and arrivals. With the railway operating seven days per week and the terminals five, a good deal of efforts is required to keep the system operating smoothly. Much has been accomplished in this regard by pushing for heavy unloads early in the week (1,400 or so cars per day) and lighter unloads (1,000 or so) toward the end of the week. The car turn around time has thereby been reduced.

The Grain Movement Co-ordinators of the Canadian Transport Commission must be given credit for the innovation and dedication they are applying in obtaining smooth function of the operations. Operating with little authority but maximum tact, they have become an essential component to the efficient operation of the port.

The increased use of rail for coal movement to the new terminal at Thunder Bay along with the other items mentioned will tend to increase rail congestion in the port area. The fact that all CP Rail through traffic must pass through this port area is a contributing factor. A CP Rail bypass running from Kaministikwia to Navilus is required.

The labor-management relations at Thunder Bay in recent years have been good. It is encouraging to note that unions are working toward common contract expiry dates to further improve working arrangements.

Throughout the Commission hearings, the good capacity and performance at Thunder Bay appeared to be taken for granted. It is obvious to the Commission upon examination of the Thunder Bay port and discussions with local officials that immediate maintenance in the form of dredging

is essential to the continued performance of this port as a grain handling facility.

The Commission recommends:

-- That dredging at Thunder Bay be resumed immediately;

-- That terminal switching at the Thunder Bay terminals be altered so that the switching by each railway closely parallels the country origins of each;

-- That a main line CP Rail bypass be constructed for through traffic at Thunder Bay;

-- The common gallery concept for the Richardson, Saskatchewan Wheat Pool and United Grain Growers terminals has merit and we recommend that it be implemented;

-- The Canadian Wheat Board should have the responsibility for co-ordinating the logistics for movement of all grain through Thunder Bay. The co-ordinator at Thunder Bay should be an official of the Canadian Wheat Board and must at all times on a daily basis have access to the necessary information as to train operations and vessel arrivals to effect and enforce this co-ordination function;

-- That unions be encouraged to continue their quest for common contract expiry dates.

Port of Churchill

The Port of Churchill is located in the estuary of the Churchill River on the western shore of Hudson Bay approximately 600 miles north of Winnipeg. This port provides direct access to the sea from the prairie provinces.

This area of Western Canada is still largely viewed as one of the last frontiers; it was in effect one of the first areas of Western

Canada to serve as a permanent base for Europeans having had a fort established in this location in 1689. The port served as the gateway to what is now the prairie provinces for close to 200 years. In 1813, a party of Selkirk settlers were mistakenly landed at Churchill where they spent the winter before proceeding to York Factory and up the Nelson River to Lake Winnipeg. This Hudson Bay route flourished until the building of the Canadian Pacific Railway. Western farmers were cognizant of the mileage which could be saved by the shipment of grain over this route and late in the last century began pressuring for a railway to the "Prairie Port". In 1885, 1897, and 1903, expeditions were sent to investigate a rail route. The Churchill townsite was surveyed in 1908, the same year that Sir Wilfrid Laurier promised a Hudson Bay Railway. The line was constructed from Hudson Bay, Saskatchewan to The Pas, Manitoba, between 1906 and 1910, by the Canadian Northern Railway.

The first terminus of the rail to be partially developed was at Port Nelson.

Construction of the railway commenced in 1911 as a Dominion Government project and by 1916 had reached Kettle Rapids. It then came to a halt due to the war and did not resume again until 1926.

In 1927, Churhill was designated for the terminus. The railway reached Churchill in 1929. The line was originally laid with 80 pound steel, but is now being upgraded to 100 pounds. This work is expected to be completed by 1978.

Construction of a grain terminal began in the spring of 1930 and two cargoes of grain were shipped out in 1931. In 1937, management and operation of the elevator was turned over to the National Harbours Board. The original capacity of the terminal elevator was 2.5 million bushels. This was increased to five million bushels in 1954-55.

The navigation season is restricted to approximately three months, from mid-July to mid-October. The main traffic handled is grain, although there has been some inbound traffic and the port is used as a staging area for some northern supply. In 1975, 90 thousand tons of sulphur originating in Alberta were shipped through the port.

TABLE VII-3

Churchill - Grain Shipments 1966-67 to 1975-76*

(thousands of bushels)

Crop Year	Wheat	Barley	Total
1966-67	21,031	--	21,031
1967-68	21,543	--	21,543
1968-69	22,582	--	22,582
1969-70	21,967	--	21,967
1970-71	23,402	--	23,402
1971-72	20,571	4,918	25,489
1972-73	16,279	8,856	25,272
1973-74	9,738	9,048	18,786
1974-75	551	22,186	22,737
1975-76	--	22,710	22,710
1976-77	14,083	14,307	28,390

* Canadian Wheat Board Annual Reports

The proximity of the Port of Churchill to the producers of Northern Manitoba and Saskatchewan had led prairie people to push for greater utilization of the port. The Hudson Bay Route Association with broad membership and support from provincial and local government groups and others has been instrumental in promoting the greater use of Churchill.

The port is served only by the Canadian National Railway. There is no interchange of grain traffic from CP Rail lines although there are physical interchange connections at several locations where this could be done.

A study was carried out jointly by the Canadian National Railway and CP Rail to determine if improvements in the efficiency of moving grain through Churchill could be effected. The study examined two measures which could be undertaken to reduce net mileage.

1) Gathering grain from nearby CP Rail as well as Canadian National lines;

2) Gathering all of the grain required for Churchill from those areas which would yield the greatest net mileage advantage compared to shipping to other ports.

According to the railways, the study indicated that savings effected by adopting either practice would be insignificant. These results and indeed the validity of the study are disputed by several interest groups. They contend that the use of 1974-75 as a base year was unfortunate in that the shipments were entirely barley and were therefore not representative. They also say that the first ship did not arrive until late August, 1975, thereby missing one month of shipping.

Besides the concern expressed by the railways about the possibility of improving the effectiveness of Churchill by changing grain pick up, other organizations such as the Dominion Marine Association stated strongly that Churchill utilization had reached its limit and that funds should be directed elsewhere to improve the efficiency of Western Canada's grain shipment.

The arguments about the virtues and difficulties associated with Churchill grain shipments are likely to continue for some time.

The Commission wishes to point out that:

1) That Canadian National Railway Hudson Bay line is in place; it is good and by 1978 will be capable of accommodating 100 ton hopper cars;

2) The Churchill terminal with five million bushels capacity is in good condition, but gallery belt capacity could be improved;

3) The Churchill elevator with five million bushels capacity handled over 28 million bushels of grain in the 1976 season, a handling to capacity ratio of 5.6:1 in the limited shipping period of three months;

4) Improved navigation technology can reduce the risk of shipping problems caused by ice;

5) Any increase in seaway tolls will improve the relative position of Churchill of a grain port;

6) Churchill does provide an alternate route for five percent of Canada's grain export;

7) In the fall of 1976, the Canadian Wheat Board sold 18 million bushels of wheat for delivery through Churchill in the 1977 season. This type of forward selling permits timely filling of the terminal with clean grain prior to the opening of the shipping season;

8) A Commission review of the Canadian National - CP Rail study reveals some discrepancies which when removed, finds that a saving of 762 thousand loaded car miles is possible through the development of two interchanges, one at each of Tisdale and Yorkton.

Constraints

1. Cargo and hull insurance is available only for ships which pass Cape Chidley no earlier than July 23 and clear Churchill by October 20 with additional premiums charged after October 15. This coverage has not changed since 1956 even though navigation technology has improved tremendously.

2. On the basis of 160 car trains, which Canadian National currently handles, and assuming no delay at the port or elevator, in a 105 day season Canadian National Railways have calculated they would expect to be able to deliver approximately 34 million bushels. According to Canadian National Railways, to go beyond this level would require an additional siding on each of the Herchmer and Thicket subdivisions, and a long track at Churchill. According to the Port of Churchill Development Board, this, coupled with the use of hopper cars, increases the rail capacity to 55.5 million bushels annually.

3. The handling capacity of the terminal elevator is rated by the Port of Churchill Development Board at 39.7 million bushels on a single shift operation basis, 87 days per season and 52.9 million bushels on a two shift operation. These ratings assume a portion of the grain received is precleaned. Total precleaning will enhance the capacity.

4. The practice has been to limit the type and variety of grains or grades to one or at the most two. This is a limiting factor in servicing all ships which might call at the port. Churchill has in the past lacked this ability to service ships requiring numerous grades or varieties of grain and thus has hindered Churchill's ability to increase its throughput.

5. The terminal elevator has three berths with 32 foot clearance at low tide. This is being dredged to 35 feet.

6. The gallery conveyor capacity is 50 thousand bushels per hour but with two additional conveyor belts, 100 thousand bushels per hour could be handled.

7. The current administrative framework is such that there is very little chance of Churchill competing with other ports which are oriented to Eastern Shipping. Representations for consideration by the National Harbors Board must be made through the same persons as those responsible for Montreal and Thunder Bay. As such, Churchill is seen to get short shift. With practically no local autonomy or authority, this port has not enjoyed the consideration which it commands.

The Commission is convinced that the increased utilization of the port of Churchill is, in the long term, in the best interests of Canadian trade. This applies particularly to Western Canadian grain, but could also be important to the export of sulphur, potash and other commodities, and to future imports.

As is often stated in this report, the nature of Canada's geography and the location of renewable and non-renewable resources relative to the areas of consumption is such that every effort must be made to ensure that our transportation resources are employed in the most effective and efficient manner possible.

The significant increases projected for the movement of coal from Western Alberta to Thunder Bay over both Canadian National and CP Rail and beyond is about to burden the rail and seaway transportation corridor. The anticipated increases in transport of sulphur, iron ore and potash render it incumbant upon Canada to use every element of its total transport system to the greatest advantage. The port of Churchill and the railway to Churchill are in place. These facilities with slight modification and normal maintenance are capable of performing an increasingly important function in the overall system.

One of the constraints alluded to in discussion regarding this port is the insurance factor. The record of ice related accidents is insignificant. Concerns about the danger of the use of this route should be discounted. A recent study carried out by William Zeweniuk* bears out these facts.

The insurance premiums, while high, do not discourage all Chuchill movement as they do not take away all the financial incentive

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* "Marine Insurance and its effects on the movement of grain through Churchill", William Zeweniuk, Natural Resource Institute, University of Manitoba, 1977.

Port Churchill provides.

According to evidence submitted to the Commission, new technology involving satellite information and radar has not been utilized to permit an extension to the insurance season. The basis for establishing insurance was last set in 1956. This was prior to the advent of the sophisticated surveillance technology provided by satellites. Satellites combined with back-up aircraft overflights, and ship board radar accurately pinpoint ice obstacles. Ships can be equipped with ultra high frequency transmitter receivers which will provide them with instant communication with the surveillance mechanisms at Prince Albert.

The National Reserach Council has published a study* indicating that the Churchill shipping season could be extended by 24 days on the average. Even this extension which some consider to be modest in the light of current technology represents an increase of 27 percent in the season. The Province of Manitoba Royal Commission Inquiry (MAURO) into Northern Transportation states the "close" of the season could be extended by 13 to 28 days.

The study carried out by William Zeweniuk of the Natural Resources Institute, University of Manitoba, states that the season can safely be extended to July 20th through November 10th in normal seasons, and beyond that in good ones. "Good seasons" are identifiable three months in advance with a good degree of probability.

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* "Feasibility of extending Navigation Season at Churchill Harbour", T.M. Dick.

From all of the evidence submitted, it does not appear that Churchill has been truly "tried" by the total grain handling and transportation interests. The Commission is confident that the Port of Churchill will increase in importance as a grain export port if an effort is made to fully utilize it.

The harbour itself requires more dredging. The entrance to the harbour is deserving of attention.

There has been discussion, according to the Port of Churchill Development Board, to the effect that an expansion of terminal capacity at Churchill is a possibility. With five million bushels current capacity and the requirement for working space of 1 to 1.5 million bushels, it does not appear efficient to use Churchill for cleaning grain. Rather, the grain should be cleaned inland before shipment to Churchill. The following positive results could thus be attained.

1) With clean grain only moving through Churchill a greater variety of grains could be shipped through the port. The space currently used for working space could be used for other grains or grades thereby accommodating a greater variety of carriers. It has been reported that the lack of ability of Churchill to carry numerous grades of grain has hindered that port's ability to increase throughput.

2) The throughput of the terminal elevator could be increased by approximately 25 percent due to the clean grain factor alone.

3) The unnecessary haulage of screenings would be eliminated. There is no market for screenings at Churchill. Screenings must be back-hauled great distances to the prairies or accumulated and shipped by vessel load to the Atlantic or St. Lawrence ports.

4) By utilizing the Churchill grain terminal for clean grain only, it is estimated that 55 to 60 million bushels annually could readily be put through this port.

To provide for this type of throughput, some institutional and structural changes would be required to the system. The port changes have already been mentioned, i.e. improved gallery; dredging; harbour protection; installation of some passing tracks.

Other changes are required to provide clean grain in sufficient quantity to satisfy the 55 to 60 million bushel requirement. According to studies carried out by the Commission, more than this quantity of grain is available from Canadian National blocks 11, 15, 17, 21, 23, 25, 27, 29 and 31, and CP Rail blocks 73, 74 and 75. This total area has an estimated production of 240 million bushels. Assuming that no cleaning or drying would take place at Churchill, it appears logical that the Saskatoon government terminal be used to a maximum. This Canadian government elevator has been grossly underutilized. The escalation in stop-off charges has inhibited recent use of the government elevators as a back up to terminal stocks. This elevator with a capacity of 5.5 million bushels would permit Churchill to commence the shipping season with 11.0 million bushels of clean grain in position. The Government elevator at Saskatoon should be capable of providing 30 million bushels during the season.

A Canadian Government Elevator at Yorkton

Another government elevator capable of shipping 25 to 30 million bushels is a necessity. The Commission study referred to above concludes

that grain should be gathered from both Canadian National and CP Rail areas which provide the greatest haul advantage in servicing Churchill. The stop-off charge must be eliminated. It is recommended by the Commission that most, if not all, of the grain destined for cleaning prior to being forwarded to Churchill will be delivered to a government elevator by rail. It is necessary that this additional capacity be located in an area served by both railways. It is also desirable that such a facility be in an "en-route" location relative to the gathering hinterlands and the port. A third criterium for location of this additional facility would, in the interests of screenings utilization, be in the vicinity of a livestock production area. Yorkton, Saskatchewan, meets these three criteria. Yorkton is stragically located, as it is serviced by the Canadian National Yorkton and CP Rail Wynyard subdivisions, both heavy grain lines, and is adjacent to the Canadian National Qu'Appelle, Watrous and Rivers Subdivisions, and CP Rail Sutherland and Tisdale Subdivisions. Yorkton also has a feed manufacturing plant which could utilize screenings produced locally.

Screenings cleaned from grain at either Saskatoon or Yorkton have an opportunity to move into a variety of markets. These market opportunites are not available at Churchill. Inland screenings can first move into the local market; secondly, to other feed deficient areas in the prairies; thirdly, to domestic markets in Eastern Canada, or to export markets through Thunder Bay or Vancouver.

Currently, to service Churchill, it is necessary for the Canadian Wheat Board to hold back callable stocks on the farms, in railway

rolling stock and in primary elevators on Canadian National lines, which often creates congested elevators and the inequitable application of delivery quotas pending the opening of Churchill.

Thus, a stress is placed on all segments of the industry from farm to elevator companies, to Wheat Board operations. It is the opinion of the Commission that this stress could be eliminated if the Government elevator at Saskatoon and the one proposed for Yorkton be fully utilized.

The Commission recommends:

-- The Railway stop-off charge for in-transit storage at inland government elevators be eliminated.

-- That the Canadian Government elevator at Saskatoon be fully utilized in the cleaning, storage and shipment of grain to Churchill.

-- Rates be established from all CP Rail points in the area serving Churchill. These rates should be distance related and comparable to distance related grain rates on the Canadian National Railways. The railways be required to interchange cars for Churchill at common interchange points.

-- A new Canadian Government elevator be built at Yorkton capable of handling 25 to 30 million bushels per year.

-- That the Canadian Government work with local authorities in increasing the insurance season on grain carriers between Cape Chidley and Churchill and readjust the rate reflecting contemporary conditions.

-- The suggested new system for the management of Canadian ports will enhance the influence of local authorities in the development of the Port of Churchill and the Commission supports early passage and implimentation of the legislation.

Pacific Coast Ports

Export grain from primary elevators destined to the West Coast moves through terminal elevators at one of two ports - Vancouver or Prince Rupert. There are four terminals in Vancouver with a total capacity of 25.0 million bushels; one in Prince Rupert with a capacity of 2.2 million bushels. In order to facilitate increased grain exports, the Canadian Wheat Board announced in April, 1976, an incentive program to encourage the construction of up to 14 million bushels of additional terminal capacity at West Coast ports.

The two main functions of these terminal elevators are the transferring of grain from rail cars to vessels, and the cleaning of grain while in the terminal.

1. The Port of Vancouver

Although the Canadian Pacific's completion through to Vancouver in 1885 opened a new route to world markets for prairie grain production, only limited shipments left the port during the early years. The earliest recorded shipments indicate that 50 thousand bushels of bagged wheat were shipped to Liverpool via Cape Horn in 1900. Later in that same year, another 50 thousand bushels were shipped to China.

The completion of the Panama Canal in 1914 saw construction of the first major terminal at the West Coast. Completed in 1916, the Federal Government terminal had a capacity of 1.2 million bushels. By 1922, exports from Vancouver reached 14 million bushels, 10 million bushels going to the United Kingdom through the Panama Canal.

a) Saskatchewan Wheat Pool

The 5,472,000 bushel capacity elevator is located on the north shore of Burrard Inlet. This terminal elevator can handle all types of cereal grains and oil seeds that are moved through the West Coast. The majority of the durum wheat is directed to this terminal because of the cleaning equipment available. Saskatchewan Wheat Pool is proceeding with plans for a three million bushel expansion of its terminal, along with corresponding improvements to the workhouse and sidings.

Canadian National provides rail service to terminals on the north shore. CP Rail cars move from Coquitlam to the CP Rail - Canadian National interchange at Sapperton, located on the Burlington Northern Railway line and on to the north shore. CP Rail empty cars are returned by Canadian National to Sapperton and are picked up by CP Rail. British Columbia Railways traffic destined to Saskatchewan Wheat Pool is interchanged at the British Columbia Railway-Canadian National Railway interchange located just east of the First Narrows Bridge.

b) Alberta Wheat Pool

This elevator is located on the south shore of Burrard Inlet and has a present capacity of 7,300,000 bushels. It is well equipped with trackage for both box cars and hoppers.

Only the CP Rail has access to Alberta Wheat Pool and CP Rail grain moves from Coquitlam westward to "K" yard located beside the terminal. Canadian National Railway cars for Alberta Wheat Pool are interchanged at the yards at Campbell, due west of the terminal and are

handled by CP Rail to and from this point. There presently is not a substantial amount of British Columbia Railway grain destined to Alberta Wheat Pool which required movement over the Canadian National Railway to Willingdon Junction, Burlington Northern Railway to Sapperton, CP Rail to Coquitlam and thence CP Rail to Alberta Wheat Pool.

c) Pacific Elevator Ltd.

These two terminal elevators are also located on the south shore and have a large annex between them which can be handled by either elevator. The combined storage capacity of this complex is 7,111,500 bushels. These facilities are owned by the Alberta and Saskatchewan Wheat Pools who practice plant specialization to a limited degree by directing certain grains to particular elevators.

Both Canadian National and CP Rail have access to these elevators which have limited trackage for loaded and empty cars.

d) United Grain Growers

This 3,645,000 bushel capacity terminal is located on the south shore. On-site trackage is limited, and the need to have empty cars removed from the service tracks before loaded ones can be placed requires the railways to switch frequently in order to keep the terminal in operation. Adjacent property has become available which will enable the expansion of trackage and storage capacity.

Both Canadian National and CP Rail service the United Grain Growers Terminal.

e) Burrard Terminals Ltd.

The terminal is presently out of use due to an explosion and

fire which occurred in the fall of 1975. Located on the north shore of Burrard Inlet, the 1,500,000 bushel terminal was used quite extensively for specialty grains. The company has announced plans to rebuild the workhouse and expand plant capacity.

The Vancouver hearing in October 1976 concentrated in part, on the situation and difficulties attending the carriage of grain to the several terminals on both sides of Burrard Inlet and the loading of ships carrying grain to overseas customers. Virtually, all grain exported from the West Coast is moved through the Port of Vancouver. The operation of the Port has been severely criticized. The Government of British Columbia in its brief to the Commission said:

> "The interswitching rules and interswitching rates used today are archaic. They date back to World War I. They must be updated whether we have a terminal railway or not".

Many of the submissions made to the Commission at the Vancouver hearing reiterated the complaint and stressed that things had to be improved.

A few submissions advocated the creation of a Vancouver Terminal rail switching facility independent of the five rail lines operating in the Port. It was argued that the idea had merit and that there exists precedents for a facility of this kind at New Orleans, Portland and other grain export points.

In reviewing the Port of Vancouver situation, Mr Fred Spoke, Manager of the Port of Vancouver said:

> "We are not convinced that a port terminal railway jurisdiction is necessarily the answer to its improvement. Ideally, we can envisage a system of common use of the railway infrastructure around the port, by all existing railway organizations, with the rail traffic to and from their destination points in the port being regulated

from one central control. The parallel with air traffic into and out of major airports being regulated through the airport control tower comes to mind."

The terminal rail concept was considered by the Commission along with other alternatives, some of which were:

1) Leave matters as they are;

2) Entrust the entire grain switching operation to either CP Rail or Canadian National;

3) Expand the use of joint running rights;

4) Appoint a coordinator with specific powers to control the movement of grain cars to the several terminals.

-- A Terminal Rail Authority

The terminal rail idea found no support from any of the five railways operating in the area. The spokesman for the Canadian Railway Labour Association said that his association was strongly adverse to the proposal. He urged that adoption of the idea would create grave labour problems having regard to the various labour agreements with the rail companies.

It was very evident from what was told to the Commission that there must be some improvements, matters cannot continue as they are. The situation may be having a damaging effect on sales to foreign buyers. This is illustrated in a message sent to the Canadian Wheat Board and others from the Steamship Agents at Vancouver for the People's Republic of China in February, 1977, which reads:

"As steamship agents representing the People's Republic of China in Western Canada, we wish to voice our concern with respect to the forthcoming grain movement to China.

Over the past few years our principals have been subjected to enormous delays in the loading of their grain vessels at Vancouver. Many delays, particularly

during the latter half of 1974 and early 1975 were caused by labour unrest and strikes. However, many delays were caused by the direct result of insufficient grain being available, elevators overstocked with grades of wheat other than those required under the contract, grain damp, grain in unclean condition, and poor railcar deliveries. Many reasons and causes are claimed, of which some are no doubt quite valid, but it is of little consolation to a customer when his vessels are waiting idle at anchorage for days and weeks.

These numerous problems have not only placed the Canadian export industry in a very embarrassing light with potential buyers of our products, but has in the past few years cost the Canadian taxpayer untold millions of dollars in ship demurrage and further losses in trade.

It is our understanding that Canada is committed to sales contracts this year with the Chinese totalling 2,250,000 long tons of which 1,350,000 long tons are to be moved between February and June. It is our sincere hope that this commitment will be met without the habitual problems and delays experienced in the past. And we and our principals trust you will exert every effort to accomplish the successful delivery of this program."

Mr. Spoke in his evidence stated:

"We find it essential that the railways and street-ends on the north shore of Burrard Inlet be separated in grade without delay. This will necessitate construction of overpasses and/or tunnels at a number of these intersections which have already been identified, in a study recently completed under the auspices of WESTAC."

The Honourable Jack Davis, Minister of Transport for the Province of British Columbia said:

"Cooperation is certainly preferable to the creation of another railway entity. We don't need another bureaucracy imposing its will, its added cost on our transportation network here on the Coast. We don't need it to route unit trains to Roberts Bank.

We don't need it to run unit trains onto the North Shore of Burrard Inlet either, so the case for a terminal railway rests on the assumption that the five major railways won't

work closely together on the interswitching of mixed train movement in metropolitan areas.

There are other courses we can pursue. One is the setting up of a task force like that established a few years ago in St. Louis, Missouri. There, representatives of management, labour, and several levels of government, worked together to produce a more effective system. This all interests approach recommends itself to us. It appeals to us also because it would bring organized labour into the picture here in Vancouver.

WESTAC, the Western Transportation Advisory Council, which was set up several years ago to perform this and similar tasks, is well placed to take on this job. It's already an organization which includes government, major carriers, shippers, management and labour. It has carried out a number of studies, including the need for grade separations and methods of improving grade handling in the port area. Your Commission may see fit to name WESTAC as the agency best able to co-ordinate a task force, a la the St. Louis experience which can smooth out our rail operations in the terminal area."

In the light of the foregoing, the Commission agrees that a terminal switching authority is not the solution for the Port of Vancouver difficulty.

Neither Canadian National nor CP Rail saw merit in the idea of entrusting the entire grain switching operation to one or other of these companies.

However, as stated by the Honourable Mr. Davis, the concept of co-operation among all the elements involved in making the Port of Vancouver function efficiently seems to present the best possibility for improved operation. The creation of a task force recommended by Mr. Davis along the lines formulated in St. Louis has great merit. It brings labour fully into the picture, for without the co-operation

of the labour unions, no plan or operation can achieve the goals necessary to make Vancouver the grain export port it must be, if Canada is to maintain its place as an exporter of grain.

The Commission accordingly recommends the creation of a task force to co-ordinate rail operations in the Port of Vancouver and that WESTAC be engaged to structure such a task force modelled, as far as is practical, on the St. Louis operation.

-- A Controller with Power

There is now a co-ordinator who directs the railways in placing cars loaded with grain in the terminals in some equalizing sequence. He has been doing an excellent job in a difficult situation but lacks the power to enforce his directions. Matters cannot be left to the persuasive powers of an employee of Canadian Transport Commission as is now the case.

The coordinator should have the authority to allocate and direct grain cars to the terminals he selects and his orders should be carried out expeditiously and without fail by the railways under pain of substantial penalties. This coordinator would better fulfill his function if he was an official of the Canadian Wheat Board with whom he would be in constant communication and direction insofar as allocating grain cars to the terminal that the Wheat Board is at any given time in need of. The Canadian Wheat Board should have the responsibility for coordinating the logistics for movement of all grain through the West Coast. The coordinator at Vancouver must at all times, on a daily basis, have

access to the necessary information and data as to train operations and vessel arrivals to effect and enforce this coordination function.

It is mandatory that the Wheat Board should take a more prominent and agressive role in the handling and transportation of grain in Canada and we return to this subject in our discussion of the ports of Prince Rupert.

-- The Fraser River Bridge

An incongruous situation exists in regard to the grain traffic which must cross the Fraser River Bridge to reach terminals on both sides of Burrard Inlet. This is a Department of Public Works bridge, and is a virtual bottleneck for Canadian National traffic going to the grain terminals. Track improvements are in progress by Canadian National and Burlington Northern but will be ineffectual as long as the bridge has only a single track and is remotely controlled. The dispatcher who controls the movement of trains over the bridge is an employee of Burlington Northern based in Seattle. That company said that there was an assistant to the dispatcher located in the Vancouver yard of Burlington Northern and it was this person who controlled the operation. However, in an on-site inspection of the traffic routing through the port area, one of the Commissioners found that the train he was monitoring had to communicate with the dispatcher in Seattle for leave to cross the bridge. It appears that Burlington Northern traffic has precedence over this bridge. The resident assistant said he had to get his instructions from Seattle. It is not a case of being nationalistic, but

of efficiency that the Commission recommends that control of traffic over this Government owned bridge be in the hands of Canadian National in Vancouver.

-- The Gap British Columbia Railway to Burlington Northern

There is another traffic arrangement in the port which must be changed. British Columbia Railway brings traffic from its railway to the North Shore of Burrard Inlet. The greater share of this traffic is lumber destined for the Burlington Northern on the south side of the inlet for the United States market. There is no direct connection between British Columbia Railway and Burlington Northern but a six mile gap. This gap has to date been bridged by what is called a 'hook and haul' operation. Canadian National hooks onto British Columbia Railway cars and hauls them to where they are taken over by Burlington Northern. Canadian National charges $40 per car for this service.

In the summer of 1976, the United States Inter-state Commerce Commission authorized an increase in lumber freight rates. Burlington Northern refused to put the increase into effect although Canadian National and CP Rail did so in Canada. British Columbia Railway went along with Burlington National and refused to make the increase. Canadian National was insisting that British Columbia Railway should do so, and to put pressure on both Burlington National and British Columbia Railway, raised the 'hook and haul' charge to $100 a car, purporting to act under section 268(2) of the Railway Act, but contrary to 269(4), and exacted that charge until British Columbia Rail and Burlington National capitulated and came into line. After this, Canadian National reduced

the charge to the previous $40 a car. This type of economic blackmail cannot be countenanced. British Columbia Railway is far too important to the lumber industry of British Columbia and to the Province's hinterland to be left to the mercy of such a competitor. It is a matter of regret that action of this kind can be done without the prior approval of the Canadian Transport Commission.

The Commission accordingly recommends that British Columbia Railway be given running rights over Canadian National from the southern terminus of British Columbia Railway to the points where its trains are taken over by Burlington National. The Canadian Transport Commission should impose equitable terms and conditions for these running rights in pursuance of the powers conferred to it under the Railway Act and The National Transportation Act.

-- Future Expansion

The time may be fast approaching when serious consideration will have to be given to the view that expansion of port grain terminal facilities should be located other than on Burrard Inlet. The whole inlet area is becoming congested with no room for rail expansion to accommodate solid trains of 125 cars. There are also pronounced environmental objections being raised to the proposed rebuilding of Burrard Terminals and to the expansion of the Saskatchewan Wheat Pool terminal. These objections were not brought forward at the Vancouver hearing, but are now surfacing, being brought to the municipal authorities.

-- Labour in the Port

The grain export operation in Vancouver resembles railroading in that it should be by and large a continuous operation.

The railways do not stop operations on weekends, or holidays or at night. Any segment of the whole grain movement from unloading into the terminals to loading into the vessels, which comes to a halt necessarily slows down or stops the entire operation.

The ideal situation would be that all segments of the movement should,when necessary, be prepared to work continuously. Most of the Union employees in the several bargaining units are prepared to do this and actually do so. Negotiations to make the practice universal ought to be vigorously pursued.

Naturally this will involve overtime and other shift payments, but would not interfere with the five-day work week for employees. However, having regard to the importance of the operation in the maintenance of Canada's good name and reliability as a grain exporter and the excessive costs caused by delays, including demurrage paid to vessels, this extra for overtime would be money well spent.

The Commission recommends that the task force which it advocates be structured by WESTAC should make this continuous operation a prime target. The Commission also recommends that recommendations 18, 19 and 20 of the Report of the Honourable Mr. Justice E.D. Bayda, dated July 22, 1975 which read:

- Recommendation 18

"There should be convened, immediately, a meeting of the senior executive officers of those unions (excluding the railway unions) whose members engage in the grain handling industry (see Finding #13) in the Vancouver Port area with a view to commencing discussions ultimately leading to an agreement by those unions to bargain jointly."

- Recommendation #19

"There should be convened, immediately, a meeting of senior management personnel of the terminal elevators and those companies (excluding railways) who are engaged in the grain handling industry (see Finding #13) in the Vancouver Port area and of senior officials of Treasury Board with a view to commencing discussions ultimately leading to an agreement by those employers to bargain jointly."

- Recommendation #20

"If joint bargaining does not ensue within the next year then legislation should be passed to provide for a common date (in any year) on which all collective agreements between employers and employees who are directly involved in the movement of grain through the Vancouver port will expire."

should be an integral part of the study by WESTAC with a view to achieving the objectives which these recommendations envisage. The time frame which these recommendations envisaged has elapsed, however, the procedures they suggest are as valid today as when they were proposed by Mr. Justice Boyda.

2. Squamish

There is no doubt that the Port of Squamish has the potential of being an efficient grain exporting port. However, at this time, its location impedes development. The only grain carried directly to or through Squamish is grain from the Peace River Block in Northeastern British Columbia or on occasions when the Canadian National line through the Fraser Valley is out of commission and trains from Edmonton are diverted on to British Columbia Railway at Prince George. The Commission deals elsewhere with the suggested Ashcroft-Clinton cut-off. If and when this link is established between the Canadian National, CP Rail and British Columbia Railway, the potentialities of Squamish may be realized. The existence of this nature favoured port may ultimately be a decisive

factor in the construction of the Ashcroft-Clinton link.

Congestion on Burrard Inlet and environmental considerations may compel the establishment of a modern grain export terminal outside Vancouver, in which case Squamish could well be the first choice.

3. Prince Rupert

There are advantages to the Port of Prince Rupert that have not been fully developed or utilized.

It is 500 miles closer to the Pacific rim ports than Vancouver. It is on a direct rail line from Edmonton. It is an all year port. The Canadian National rail line is capable of carrying fully loaded 100-ton hopper cars. The Government elevator at Edmonton should be used as a surge facility with clean grain ready for shipment to Prince Rupert as needed.

It stands to serve as the nearest port to the Peace River Block, in both Northern British Columbia and Northern Alberta, when British Columbia Railway is linked with the rail lines which now serve, and will be constructed to serve, the Peace River area in both provinces. The potentialities of the Peace River Block are set out in Chapter 4 dealing with the recommendation for a development department of Canadian National to serve Northern Alberta.

The potential of Prince Rupert will not be achieved until the present terminal is enlarged and fully modernized and then only if the operators of the terminal use it actively as an export facility and not as a storage-oriented unit to be activated when Vancouver is congested or out of action for one cause or another.

The misuse of Prince Rupert as an export terminal is illustrated in a communication, from the Operations Manager of North Pacific Shipping Company Ltd., dated February 17, 1977, which reads in part:

> "Earlier this month I planned, together with the CWB locally, to schedule 3 and possibly 4 vessels to load at Prince Rupert. However, a prime example of mismanagement by the CWB has resulted in only 2 vessels being actually able to load in February at Prince Rupert. The following vessels were originally supposed to have loaded at Prince Rupert:
>
> Gui Hai - which arrived Prince Rupert January 27th, 1977
>
> Aegean Sea - which arrived Prince Rupert February 11, 1977
>
> Chukchi Sea - ETA Coast February 19, 1977
>
> Koro Sea - original ETA February 28th, 1977
>
> For your interest, prior to her arrival on January 27, 1977, it was expected by the elevator in Prince Rupert and the CWB in Vancouver that Gai Hai would sail latest January 31, 1977, therefore leaving ample time for building of stock to handle the next vessel, Aegean Sea ETA February 11th, 1977. You will be surprised to note that the Gui Hai at this time of writing is still sitting at the grain elevator at Prince Rupert, but is scheduled to sail at 1300 hours today. The problem was that almost 100% of the grain for this vessel arrived at Prince Rupert in tough condition. I understand the dryer in the Prince Rupert elevator would be hard pressed to make it in a ladies hairdressing salon.
>
> Meanwhile Aegean Sea has been sitting at anchorage at Prince Rupert since February 13th, but will commence loading tomorrow, February 18th. However, at this time we have no idea when she will complete. We have now been advised by the Board that both the Chukchi Sea and Koro Sea must be diverted to Vancouver as they cannot handle these two ships in Prince Rupert in February."

The Commission recommends that the terminal at Prince Rupert be enlarged to a capacity of six million bushels and fully modernized,

and that it be operated to its fullest extent as part and parcel of Canada's grain export operations. It must not continue to be an orphan in the export family. Dr. Kristjanson, Assistant Chief Commissioner, Canadian Wheat Board, when appearing before the Standing Committee on Agriculture, House of Commons, June 1976, stated:

> "Well, as far as our Board is concerned, we are very, very anxious to see a development at Prince Rupert... We would like to see another 3 million bushels storage capacity added to the present facility as an absolute minimum. ... the crux of the problem from the standpoint of the existing grain companies is that they do not like the Canadian Wheat Board to be directing grain that they originated in their country elevators to somebody elses terminal. And that is why our position has been that it would work much better if it (Prince Rupert) were in the hands of someone who was also originating the grain in the country."

Failing full utilization by the Canadian Wheat Board, the terminal should be entrusted (leased or sold) to a grain exporting concern which would have a financial incentive to use it to its full exporting capacity, and not for storage income which its use as a surge facility for Vancouver might make it economic but inactive.

With efficient and continued use of Prince Rupert, some of the millions spent annually on demurrage in Vancouver could be saved for the producers whose money it is.

Interior Canadian Government Elevators

The Canadian Grain Commission operates and maintains the Canadian Government Elevator System of five interior terminal elevators.

TABLE VII-4
Canadian Government Elevators

Location	Storage Capacity (bus.)	Opening Date
Saskatoon	5,500,000	October 15, 1914
Moose Jaw	5,500,000	October 14, 1914
Calgary	2,500,000	September 1, 1915
Edmonton	2,350,000	October 16, 1924
Lethbridge	1,250,000	October 8, 1931

The advantages for building the interior government elevators were set out in the Report of the Grain Commissioners for the year 1912.

1. They would bring inspection and terminal storage nearer to the grain producer, and thus secure for him quicker returns and better financial terms.

2. Grain stored at such points could be shipped by any of the alternative routes available, according to conditions, by the Panama Canal and Hudson Bay routes, if practicable, and in the event of the duty on grain being lowered or removed, south also.

3. Such elevators would be equipped with cleaning and drying apparatus, and would thus make the best possible provision for such conditions as obtained last year.

4. Such elevators would tend to assist the milling industry in the west. Under present conditions only the very largest mills can buy to advantage. Smaller mills buy from local elevators and from farmers and buy at a disadvantage, not having official grades and not having large stores of grain to draw from.

5. Such elevators would tend to preserve in existence local grain dealers and independent buyers.

6. Such elevators would tend to distribute the shipping of grain more equally throughout the year, and especially in the more western sections should the Panama Canal route prove feasible.

7. Such large interior elevators would in general provide that reserve storage capacity which Western Canada now lacks, would, therefore, provide for all emergencies, whether of production, climate or congestion; would bring inspection into closer relation with production; and would thus secure for the grain growers of Western Canada those advantages of quicker returns and alternate shipping routes which they can now only observe south of the boundary line.

These facilities have been used very sparingly over the past several years because the grain handling companies have, quite naturally, preferred to establish their own facilities whereby they are able to maintain control over Canadian Wheat Board grain and their grain and realize profit from the grain handling and storage.

TABLE VII-5

NET RECEIPTS OF GRAIN - INTERIOR TERMINAL ELEVATORS
(thousand bushels)

CROP YEAR	Wheat	Durum Wheat	Oats	Barley	Rye	Flaxseed	Rapeseed	TOTAL
1965/66	3,649	26	41	1,267	26	74	1,313	6,397
1966/67	12,758	4	6	1,261	10	33	164	14,236
1967/68	1,896	6	12	1,197	7	4	25	3,147
1968/69	17,471	10	83	1,051	7	63	24	18,709
1969/70	2,634	41	9	1,429	4	201	525	4,843
1970/71	852	142	16	1,834	22	124	2,332	5,322
1971/72	832	1,226	10	9,369	28	2,550	1,320	15,335
1972/73	746	1,193	126	4,784	4	1,795	5,118	13,766
1973/74	13,406	1,977	380	9,908	221	893	3,317	30,102
1974/75	14,063	4,553	183	8,960	220	148	3,302	31,428
AVERAGE	6,831	918	87	4,106	55	589	1,744	14,329

As at mid March 1977 the interior elevators had 6.2 million bushels in store, utilizing about one-third of their capacity of 17.1 million bushels.

The Government elevators are in place. They are in relatively good condition. They contain good drying equipment. Any deficiencies in cleaning equipment could be overcome quickly. These elevators are capable of conditioning grain to export standards. These elevators are practically unused, while at the same time the farmers of Western Canada, through the Canadian Wheat Board, are subsidizing additional terminal capacity at the Coast. The non-use of the Government elevators constitutes a waste of resources.

The railway practice of charging a large stop-off charge (currently 18 cents per hundredweight) for in-transit grain held for storage, cleaning or drying has been detrimental to the use of these public facilities.

Cleaning Capacity

Government elevators have the following cleaning capacity at each plant. Basis a two shift daily operation.

- Moose Jaw	90,000 bushels
Saskatoon	120,000 bushels
Calgary	60,000 bushels
Edmonton	120,000 bushels
Lethbridge	50,000 bushels
TOTAL	440,000 bushels

On a five-day week operation these plants have a three shift annual capacity of 114.4 million bushels. On a six-day operation they have the capacity of 205.9 million bushels. These plants have adequate receiving and loading capacity, with cleaning being the limiting constraint.

The Commission feels that the producers of Western Canada should not be expected to again pay for the duplication of grain handling facilities. The Commission recognizes that the utilization of these Government elevators may be to the detriment of the revenue generating capacity of the grain companies. However, in terms of efficient operation of the total system, it is incomprehensible that farmer organizations are now being established to build facilities nearly identical to

those that have been provided by the Government of Canada, and leave the latter unused. The Commission has no doubt about the ability of the system to function more smoothly if these Government elevators were used to condition grain for export, thereby using either current port terminals, or bulk loading facilities for the transfer of the conditioned grain from rail to ship. The Commission interprets the Canadian Wheat Board Act to mean that class B grain purchased for the Board by a primary elevator immediately becomes the property of the Canadian Wheat Board, subject only to the limited provisions of section 37 of the Act. The Canadian Wheat Board has the right to direct grain to terminals as it sees fit.

The Commission recommends the full use of the Government elevators and the construction of another one at Yorkton.

The Commission does not look upon the Government elevators as replacement for any of the current terminal capacity facilities, but as an addition to systems capability of handling grain.

The Commission recognizes that even with the elimination of the stop-off charges that there are going to be additional handling costs associated with the utilization of the Government elevators. However, these should be more than offset by the ability to respond to market opportunities; to achieve such things as the elimination of demurrage of waiting ships, and the ability to use all the ports more effectively.

Agriculturally related activities on the Prairies should be promoted when and where natural locational advantages exist. Grain cleaning is one of these. This processing can take place on the

Prairies where there is no population congestion, less environmental impact concerns and an opportunity for utilization of by-products.

The Commission recommends:

- Elimination of the railway stop-off charge for in-transit shipment of grain held at interior Government elevators for storage, cleaning or drying;

- Utilization of the interior terminals to the fullest extent possible to supplement storage and cleaning capacity at Thunder Bay, Churchill, Prince Rupert and Vancouver; and,

- Construction of a new interior terminal at Yorkton to supplement capacity and throughput at Churchill.

CHAPTER 8

ENERGY AND GRAIN TRANSPORTATION

ENERGY AND GRAIN TRANSPORTATION

The energy crisis of the 1970's has created a general awareness of the fact that mankind's conventional energy sources are finite in nature. Since World War II, North America's total annual energy consumption has doubled every 16 years.* There is general agreement that this exponential exploitation of finite natural resources may be one of the major limits to growth of the world's population and industrial society within the next century.**

In voicing resistance to changes involving rail line abandonment, virtually all submissions to the Commission at local hearings cited increased energy consumption as a major concern. The general comments centred around the argument that trains can move loads a given distance on much less fuel than if an equivalent amount of work was performed by trucks. Typical power unit energy or fuel consumption figures have been cited to show that trains are from three to nine times more efficient than trucks.

An overview and breakdown of energy resources and consumption in society at large will lend perspective to further examination of the possible energy effects of rationalization in the prairie grain handling and transportation system.

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* Cheney, Eric S., Scientific American .....Jan. - Feb.,1974.

** Meadows, D.H., D.L. Meadows, G. Randers and W.W. Behrens III, 1972. The Limits to Growth, N.Y.: Signet, 207 p., esp. Figures 35 and 36.

Energy Resources and Consumption

Table VIII-1 shows that at the 1972 production rate of 19 billion barrels, proven petroleum reserves of 562 billion barrels would have been sufficient to last about 30 years. Considerable disagreement exists as to the magnitude of ultimate oil and gas reserves; estimates of the U.S. Geological Survey are six to seven times greater than those of another independent party. However, the reserves are still finite and with demand growing exponentially, an arithmetic increase in the reserves does not appreciably extend their lifetimes. For example, a doubling period for consumption of 10 years would absorb an eight fold increase in reserves in only 30 years.

Alternative sources of petroleum products do exist even within the boundaries of the world's largest consumer as shown in Table VIII.2 Interpretation of these figures by comparison with oil reserves would indicate that there is a nearly inexhaustable supply which simply must be "unlocked" to provide several decades or centuries for a shift to use of renewable resources such as solar or hydro or to release the unlimited potential of atomic energy. Such interpretation is much over-simplified and overly optomistic given present technology in the extraction of oil from solids. In the case of coal, oil shale and tar sands, the only significant commercial activities today involve actual mining and handling of the solid material and transporting that solid to a processing point. A 100 thousand barrel per

TABLE VIII-1

NATIONS WITH GREATEST PROVEN PETROLEUM RESERVES, 1972

COUNTRY	RESERVES (1)	PRODUCTION (1)	NET EXPORTS 1970 or 1971(2)	U.S. IMPORTS (3)
	(All figures in 10^6 bbl.)			
Saudi Arabia*	137,100	2,201	1,378	159
Kuwait*	73,937	1,097	1,276	19
Iran*	62,202	1,849	1,573	57
USSR	42,000	2,896	233	3
United States	36,339	3,457	(-1,325)	--
Iraq*	33,000	536	546	2
Libya*	24,100	822	999	38
Abu Dhabi*	18,234	384	383	12?
Venezuela*	13,872	1,178	1,219	448
Neutral Zone*	13,500	208	(with Kuwait and Saudi Arabia)	
Nigeria*	12,600	665	533	89
China	12,500	192	(-1)	0
Indonesia*	10,700	395	263	60
Algeria*	9,750	398	351	36
Canada	8,020	564	9	371
Ecuador*	5,964	29	(-8)	6
Qatar*	5,832	177	133	2
TOTAL	519,686	17,050	8,894	1,372
OPEC* Total	420,827	9,939	8,644	998
World Total	562,295	18,638	--	1,651

* Member, Organization of Petroleum Exporting Countries (OPEC)

References: (1) World Oil, 15 August, 1973;
(2) Albers et al. 1973;
(3) U.S. Bureau of the Census 1973

TABLE VIII-2

U.S. FOSSIL FUEL ENERGY RESOURCES
BILLIONS OF BARRELS OIL EQUIVALENT

	Identified Recoverable	Undiscovered or Difficult to Recover
Oil	37	113
Shale		
Over 25 Gal/Ton	418	
Less than 25 Gal/Ton	1,600	22,500
Coal	1,900	12,200
Tar Sands	30*	--

* Evaluated Canadian Tar Sand Oil Reserves in Alberta are approximately 600 billion barrels.

day oil shale plant requires about 168 thousand tons of shale every day, roughly eight times as much solids handling as the largest coal mine in the United States ... and 100 thousand barrels per day is about 0.6 percent of current petroleum demand in that country.* Similar drawbacks exist to the extraction of oil from coal and tar sands.

Having acknowledged the serious proportions of future petroleum use and availability, it would appear that possible solutions to inadequate supply will be dependent upon careful analysis of petroleum derivatives application and upon use of alternative energy sources.

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* Coppoc, W.G. Fuels for Transportation. Energy and Transportation SP 406, February 1976. Society of Automotive Engineers.

Popular forecasts of energy consumption point to dramatic growth in the contribution of coal and nuclear energy over the next couple of decades with growth rates in oil demand decreasing from five percent to one to two percent per year.* Since transportation presently accounts for approximately 60 percent of the total oil market, such predictions are based on significant decreases in the average annual growth of consumption in this sector.

The relative opportunity for savings in fuel consumption within the transportation sector may be appreciated by reference to Table VIII-4**which provides a breakdown of fuel consumption within the Canadian transportation field. This is fairly consistent with an estimate of 1971 United States consumption which indicated that the automobile accounted for about 60 percent of fuel consumed in transportation. Road diesel users include inter-city buses and urban transit as well as trucks and therefore the resultant allocation of diesel fuel to trucks primarily on intercity hauls in Canada may be about three percent.***

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* Loveland, E.F. Non-Transportation uses for Petroleum: Impact on Fuel Availability. Energy and Transportation, SP 406, February, 1976. Society of Authomotive Engineers.

** Detailed Energy Supply and Demand in Canada, 1958-1969 and 1970-72, Statistics Canada Catalogue 57-205 and 57-207.

*** Mayes R. Robert. Trucking and Energy. A paper presented at the Annual Conference of Roads and Transportation Association of Canada, Calgary, September 23, 1975.

A study by the U.S. Department of Transportation was undertaken to determine the potential for energy savings in transportation. The results of the analysis are summarized in Table VIII-4*. It would appear reasonable, considering the breakdown by usage of Table VIII-3 for the Canadian scene, that the United States study found that major potential for energy savings is in improved automobile and truck efficiency. The potential of three to four percent savings through a shift of 50 percent of inter-city trucking to rail freight was not viewed as significant or practical. It was concluded that rail transport was most efficient in the line-haul mode and that energy consumption could be decreased by switching from truck to rail for line haul freight with the flexibility of trucking at the collection-distribution points.

TABLE VIII-3

CANADIAN FUEL CONSUMPTION -- TRANSPORTATION

Road - Gasoline	72.3%
Road - Diesel	4.1%
Rail	7.0%
Air	7.9%
Marine	8.7%
	100.0%

* Goodson, R. Eugene. Energy Utilization by Various Modes of Transportation. Energy and Transportation, SP 406, February 1976. Society of Automotive Engineers.

TABLE VIII-4

SELECTED TRANSPORTATION ACTIONS AND ESTIMATED SAVINGS AS PERCENTAGE OF TOTAL TRANSPORTATION ENERGY (U.S. 1970)

Number	Action	Total Transportation Energy Savings(%)
1	Convert 50% of passenger car population to small cars (22 mpg)	9.0
2	Introduce in 50% of highway vehicles a 30% reduction in fuel consumption	11.5
3	Eliminate 50% of urban congestion	1.1
4	Achieve 50% success in limiting highway speeds to 50 mph	2.9
5	Persuade 50% of urban commuters to car pool	3.1
6	Shift 50% of commuters (to and from city centres) to dedicated bus service	1.9
7	Shift 50% of intercity auto passengers to intercity bus and rail, evenly	3.0
8	Shift 50% of intercity trucking to rail freight	3.4
9	Shift 50% of short haul air passengers to intercity bus	0.29
10	Persuade 50% of the people to walk or bike up to five miles, instead of driving	1.6

Energy and Grain Transportation

One must be careful in defining "efficiency of movement", in that energy consumption and even total cost are only elements of the total equation. Other important considerations such as "quality of service" which might be measured by delivery time or physical condition of cargo contribute to overall performance of the service. From

a strictly economic point of view, energy consumption influences the determination of the optimum transport mode only through a cost factor and the same principles apply to selection of service as to the selection of competing goods in an open market. Proponents of the economic approach to mode selection claim that through emphasis on "value" there is natural gravitation to the best mixture of competing modes. Fuel consumption and costs therefore do contribute to determination of total cost and resultant "value".

It is significant that a number of references to the matter of energy consumption throughout commission hearings did not explicitly associate possible energy increases with higher costs. This would indicate that many individuals and organizations are concerned about future supply and that it is understood that resultant energy costs could become prohibitive. This expression of concern on the part of the public at large combined with an obvious real limit to petroleum resources as discussed in the earlier section of this chapter led to the conclusion that a detailed study* of energy trade-offs inherent to branch line rationalization was imperative.

Several factors determine the energy required to move goods and commodities as follows:

- power unit efficiency
- ratio of gross weight and carried load
- routing
- gathering and loading cycle.

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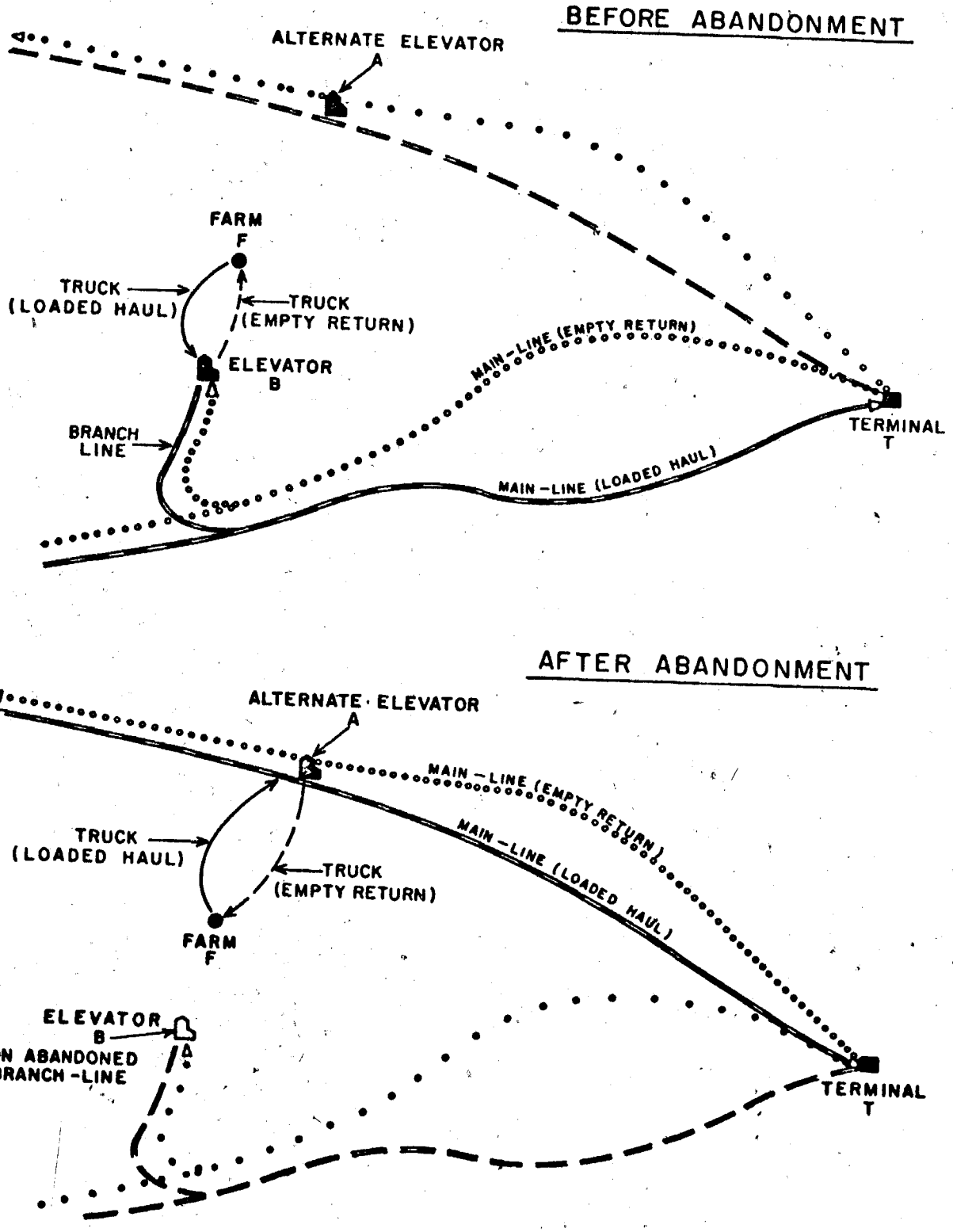
* The Energy Implications of Rationalization of Light Density Traffic Branch Lines prepared for the Grain Handling and Transportation Commission by Clayton Sparks & Associates Ltd., Regina, Saskatchewan March 1976. See Grain and Rail in Western Canada, Volume 2.

The energy efficiencies of the rail and truck modes (including private farm truck, custom farm truck and commercial grain truck) operating in grain assembly in the prairies were defined for investigation. The relatively slow speeds and small size of trains operating in grain assembly and the relatively small size of truck normally employed in grain haul suggested that indiscriminate use of modal system average transportation energy efficiencies for assessing energy requirements in grain assembly is somewhat questionable. Energy implications of rationalization are also a function of routing in that railway grain hauls from certain centres are effected in such a circuitous manner that energy savings might be realized by diverting grain (through increased truck haul) to centres from which rail routing is more direct. This section and the following two sections of this chapter present the findings of this investigation.

The study was directed at the development of a methodology for estimating the energy implications of any practical branch-line abandonment option and subsequent application of this procedure to specifically defined example abandonment scenarios. Figure VIII-1 illustrates a stylized general example of a before and after abandonment situation. Loaded and empty rail cars will often be routed through a point which is common to the before and after cases somewhere between the primary elevators and the destination terminal. In such cases, it would only be necessary to assess fuel requirements from the farm to the common point.

FIGURE VIII-1

STYLIZED EXAMPLE OF A "*BEFORE*" AND "*AFTER*" BRANCH-LINE ABANDONMENT SITUATION



-- Fuel Consumption of Trucks

Grain is transported from farm to elevator in gasoline and diesel-powered trucks ranging in size from small half-tons to 82 thousand pound g.v.w. combination units. Therefore wide variations in the transportation energy efficiencies of trucked grain are experienced. For purposes of this study, transportation energy efficiency was defined as the number of gallons of fuel consumed in both the empty and loaded directions of haul in effecting a movement of one thousand "typical" bushels over a distance of one mile.*

As truck size increases the efficiency of the vehicle as a carrier improves. This is due to a number of factors such as an increase in the ratio of payload to tare weight. The study derived a range of efficiencies as illustrated for gasoline fueled trucks in Figure VIII-2 and for the larger diesel trucks as shown in Table VIII-5. These illustrations show for example that:

a) Over a range of farm truck sizes from 12 thousand g.v.w. to 28 thousand g.v.w. gasoline consumed in movement of 10 thousand bushels a distance of ten miles would range from 170 to 81 gallons.

b) To move 10 thousand bushels a distance of 10 miles by an average farm truck of 20 thousand pounds g.v.w. would require 106 gallons of gasoline as compared to 45 gallons of diesel fuel to effect the same movement with a 74 thousand pound g.v.w. commercial truck.

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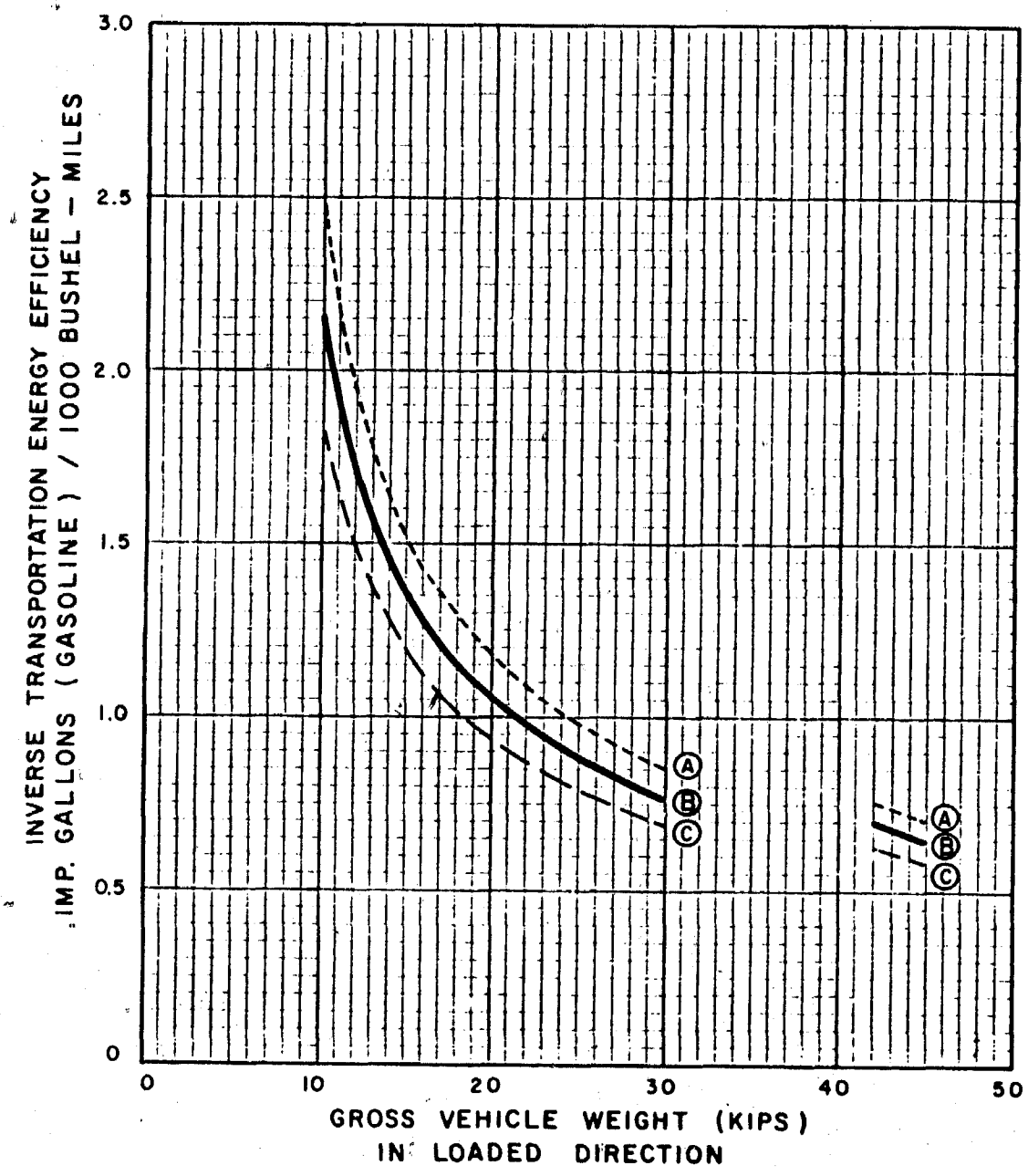
* It was determined that a typical bushel weighed 55 pounds.

FIGURE VIII-2

SCHEDULE OF INVERSE TRANSPORTATION ENERGY EFFICIENCY FOR PRIVATE AND CUSTOM FARM TRUCKS GASOLINE — FUELED



LEGEND:

(A) — COMBINATION OF "*HIGH*" CONSUMPTION AND "*LOW*" PAYLOAD

(B) — COMBINATION OF "*MEDIUM*" CONSUMPTION AND "*MEDIUM*" PAYLOAD

(C) — COMBINATION OF "*LOW*" CONSUMPTION AND "*HIGH*" PAYLOAD

TABLE VIII-5

CALCULATIONS OF INVERSE TRANSPORTATION ENERGY EFFICIENCY FOR COMMERCIAL TRUCKS

G.V.W. Loaded Direction (lbs.)	Diesel Fuel Consumed Per Return- Mile Trip (Gallons)			Payload Per Trip lbs./bushel	Inverse Transportation Energy Efficiency imp. gallons (diesel)/ 1000 bushel-miles		
	HIGH	MEDIUM	LOW		HIGH	MEDIUM	LOW
74,000	.404	.388	.374	47,500/863.6	0.47	0.45	0.43
75,000	.404	.388	.374	48,500/881.8	0.46	0.44	0.42
82,000	.408	.392	.378	55,500/1009.1	0.40	0.39	0.37

-- Fuel Consumption of Trains

A limited number of specific fuel consumption measurements were undertaken by the railways for this study. The reasonableness of these results were tested from the theoretical standpoint by estimating fuel requirements over a range of branch line situations using resistance equations based on the work of Davis. These calculations demonstrated the kind of variation which can occur from one specific fuel measurement to the next.

The basic assumptions used in the calculation were:

1) branch-line originating grain is transported in standard 60 ton box-cars with tare weights of 22 ton, "normal" loaded weights of 79 ton, and payloads of 57 ton.*

* These weights were derived from an assessment of the consistent information provided by the railways for a number of branch-line and main-line runs, and general equipment lists. Hopper cars have not been considered because of their relatively limited employment on light density traffic branch lines.

2) for each loaded mile travelled by a box-car, the car travels one mile in an empty state.

3) for each mile travelled by a locomotive pulling loaded cars, it travels one mile pulling empty cars.

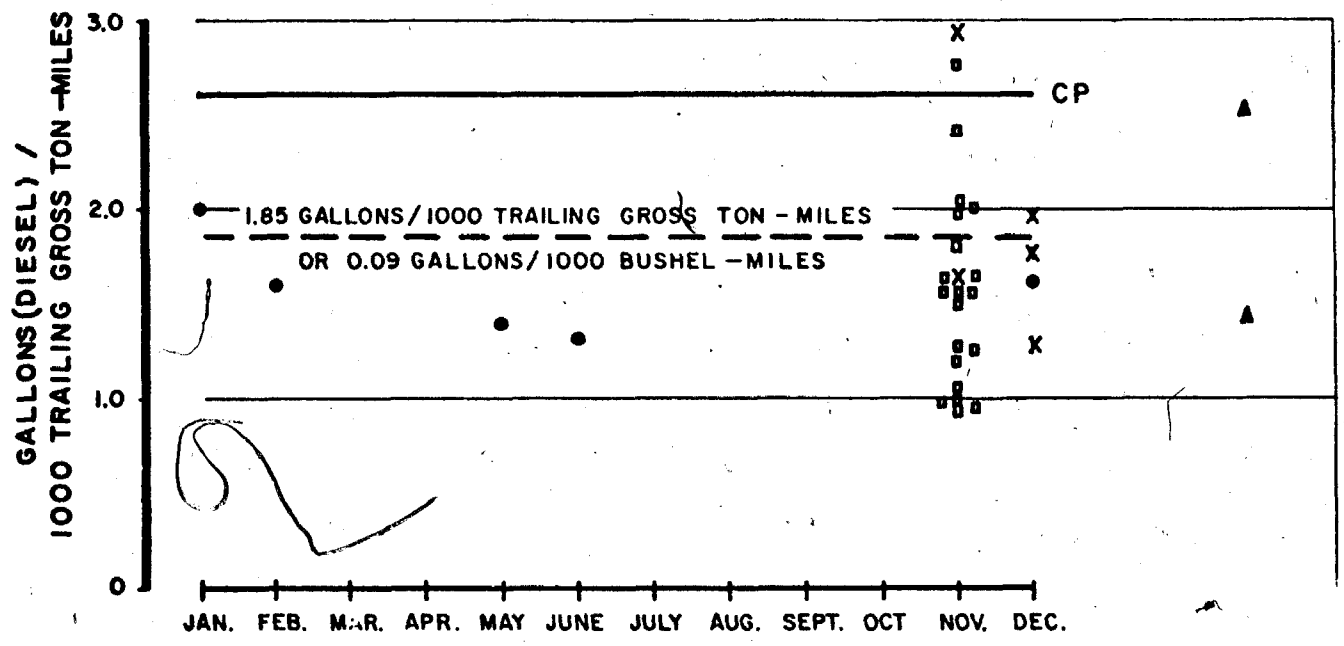
4) the payload of 57 tons is equivalent to 2,070 "typical" bushels (i.e. 55 pounds per bushel).

These calculations suggest that a normal range of transportation energy efficiencies for branch-line operation is from 0.07 to 0.12 gallons of diesel per one thousand bushel miles. The calculations showed that it is totally in order to expect efficiency levels beyond this range on specific runs and lines (i.e. with lower temperatures, greater grade effects, dead heading operation, higher sidewinds and so on). Nonetheless it was concluded that normal branch-line operation for most lines when considered year-round would fall within the calculated range.

For comparative purposes, Figure VIII-3 illustrates a number of measured consumption rates provided by the railways, including system averages, and a limited number of spot tests. These rates have been developed on the basis of trailing gross ton-miles (i.e. exclusive of the weight of engines). For most of the points plotted, fuel consumed in associated idling and switching has been included in the rate calculation. Based on Canadian National Railway data, an average experienced consumption rate in the prairie region is about 1.70 gallons per one thousand trailing gross

FIGURE VIII-3

FUEL CONSUMPTION RATES EXPERIENCED BY RAIL IN PRAIRIE OPERATION



LEGEND:

- ● CN PRAIRIE REGION SYSTEM AVERAGES (UN-OFFICIAL)
- X SPOT TESTS (TWO-WAY HAUL) - CN
- ▫ SPOT TESTS (ONE-WAY HAUL) - CN
- ▲ CALCULATED VALUS FOR SPECIFIC SCENARIOS (SEE TEXT AND ATTACHMENT C)
- CP CONSUMPTION RATE APPLIED IN CP's "ON-LINE" SUBSIDY CALCULATIONS FOR C.T.C. (1974) (UN-CONFIRMED)

ton-miles, ranging from 1.30 to 2.10 gallons through the year.* This range and average is considered applicable to cases wherein trains operate on the lines more or less year round, in such a manner as to run basically a train-load (say 20 to 50) of empty 60 ton box-cars "out" a line, returning with approximately the same number of cars loaded. The weight of locomotives would be excluded from the gross ton-mile determination, and consumption would include fuel for idling and switching, both along the run and at both ends of it.

Using the typical load per car of 2,070 bushels, tare car weights of 22 tons, and loaded car weights of 79 tons, for every 101 tons of gross ton-mile haul (i.e. 22 tons empty for one mile, and 79 tons loaded for one mile), 2,070 bushels are moved one mile. Converting the consumption rates discussed above, the average transportation energy efficiency for rail operating in grain assembly is 0.083 gallons of diesel per one thousand bushel-miles, normally falling in a range from 0.063 to 0.103 gallons per one thousand bushel-miles.

Further comparison was carried out with other studies of branch line fuel consumption, and based on various figures, it was concluded than an energy efficiency rate of 0.09 gallons per

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* In comparison, the study of "Arctic Oil and Gas by Rail", 1974, presents data indicating consumption rates of 0.97 to 1.20 gallons per one thousand trailing gross ton-miles, for relatively high speed unit trains hauling oil and LNG.

one thousand bushel-miles could be considered on appropriate rail rate to utilize in modal comparison and in the analysis of specific case situations.

-- Modal Energy Comparison, Truck-Rail

In order to compare modal energy efficiencies of grain collection in the prairies, it was necessary to establish the point on the small truck schedule which approximates the average energy efficiency rate for private farm truck haul. Since smaller trucks are less efficient than larger trucks, the consumption rate at the average g.v.w. operating level would not necessarily account for the effect on average consumption of the distribution in vehicle size and the distribution of grain haul activity by vehicle size. Accordingly an analysis was undertaken to establish the weighted average loaded g.v.w. figure to employ in the determination of average energy efficiency. For the private farm truck haul situation throughout the prairies, previous farm trucking surveys were used and it was estimated that the weighted average g.v.w. appropriate to determination of average transportation efficiency was 19,920 pounds. Therefore, from Figure VIII-2 the average transportation efficiency for private farm trucked grain across the prairies was 1.07 gallons of gasoline per one thousand bushel-miles.

Since the energy efficiency curve was quite flat over the range of truck sizes used for custom farm trucking,

the value selected for this mode was based on an approximate average load capacity in the prairies taken from a previous survey of custom truckers. Then based on this average loaded g.v.w. (of 26.4 thousand pounds) the average energy efficiency for custom farm-trucked grain was 0.85 gallons of gasoline per one thousand bushel-miles.

Discussion with weight scale operators and analysis of the Saskatchewan Trucking Association*/Canadian Wheat Board elevator to terminal haul suggested that a 75 thousand pound loaded state is normal for commercial trucks hauling grain. The average energy efficiency from Figure VIII-3 would be 0.44 gallons of diesel per one thousand bushel-miles.

Comparative fuel consumption rates for each mode are illustrated in Figure VIII-4. On a gallonage equivalency basis, the ratios of average fuel consumption versus average rail fuel consumption are:

Private far truck vs. rail	11.9:1
Custom farm truck vs. rail	9.4:1
Commercial truck vs. rail	4.9:1

Since the energy content of a gallon of gasoline is less than the energy content of a gallon of diesel the above ratios should also be presented on a BTU equivalency basis** as follows:

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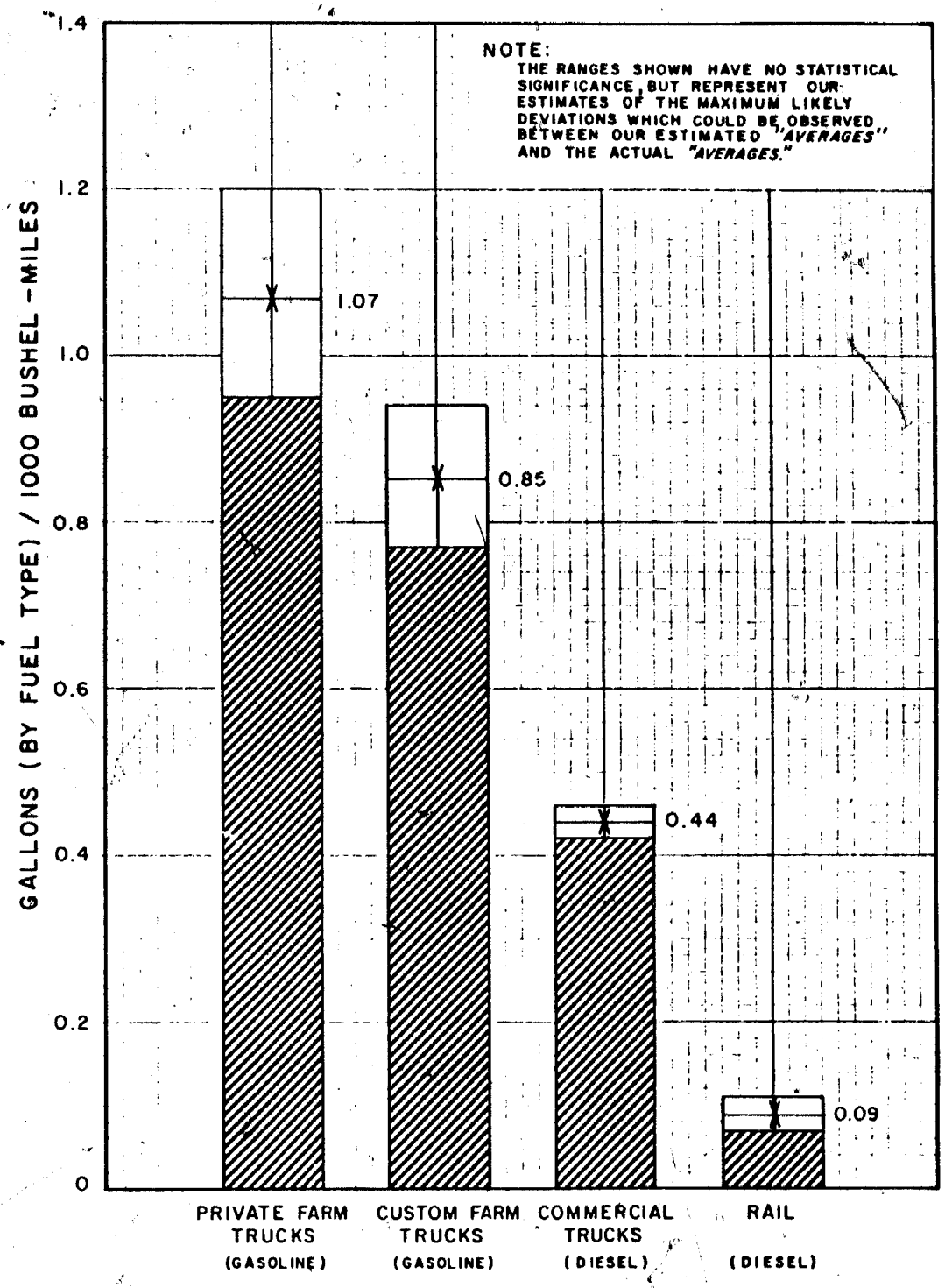
* The Saskatchewan Trucking Association entered into an agreement and helped expedite this experimental program on behalf of carriers.

** Conversion Basis: 1 gallon of gasoline = 149,200 BTU
1 gallon diesel = 166,500 BTU

FIGURE VIII-4

A MODAL COMPARISON OF INVERSE TRANSPORTATION ENERGY EFFICIENCY IN GRAIN ASSEMBLY ESTIMATED PRAIRIE AVERAGES



Private farm truck vs. rail	10.6:1
Custom farm truck vs. rail	8.5:1
Commercial truck vs. rail	4.9:1

Fuel Costs and Grain Transportation in Western Canada

Variations between type of fuel and location of purchase will create modal comparative ratios of fuel cost which differ from the ratios of energy consumption by gallons or BTU's. The cost effects of adjustments in the grain transport system can be determined by the application of developed unit prices to estimated changes in consumption quantities.

For the consumer, the price of gasoline and diesel fuel is made up of two components: the economic cost of the fuel; and the federal and provincial taxes added to fuel at points of production and sale.

For purposes of this study, a generalized method was developed for calculating applicable fuel prices for a number of regional locations across the prairies. The method consisted of:

1) the simple multiplication of the "Edmonton refining centre" energy cost by a transportation/competition factor to obtain a regional energy price at another location;

2) a deduction from this factored price to account for trade discounts, where applicable; and,

3) the addition of applicable Federal and Provincial taxes to determine buyers' prices.

Table VIII-6 summarizes the fuel prices which were determined for the prairies.

TABLE VIII-6

EXAMPLE OF FUEL PRICE DETERMINATIONS IN THE PRAIRIES
(BY PURCHASER AND LOCATION)
(CENTS/GALLON)

Determination of Energy Costs in 1975

Fuel Type	Diesel	Gasoline	Diesel
Fuel Purchaser	Railway	Farmer	Commercial Trucker
Location	Carlton, Sask.	Brandon, Man.	Rockglen, Sask.
Edmonton Energy Price	40.5	41.6	40.5
Multiply by Regional Transport Cost Factor	1.08	1.06	1.07
Regional Energy Price	43.7	44.1	43.3
Less Discounts	10.0	0.0	3.0
Energy Cost to Buyer	33.7	44.1	40.3
ADD: Taxes			
-- Federal Sales Tax	3.7	3.9	3.7
-- Provincial Tax	4.0	0.0	16.0
TOTAL ENERGY PRICE	41.4	48.0	60.0

Figure VIII-5 illustrates the results of converting fuel consumption to fuel cost for one particular case, utilizing the prairie average consumption rates developed, and modal fuel prices at Saskatoon. From a total energy cost standpoint (including taxes/rebates), private farm trucks, custom farm trucks, commercial trucks, and rail expend 42.1 cents, 33.4 cents, 25.5 cents and 3.5 cents of fuel per one thousand bushel-miles of haul, respectively.* (It is to be noted from Figure VIII-5 that, at present in Saskatchewan, an average one thousand bushels being moved one mile by a private farm truck effect a direct total government cost of 3.3 cents. The same one thousand bushels moved one mile by commercial truck generate a direct total government revenue of 8.7 cents. The net government gain to be realized per one thousand bushel-miles of haul transferred from private farm truck to commercial truck is, therefore, 12.0 cents).

Utilizing these total cost figures, the fuel cost efficiency ratios, comparing one mode to the rest at Saskatoon, are:

Private farm truck vs. rail 12.0:1

Custom farm truck vs. rail 9.9:1

Commercial truck vs. rail 7.3:1

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* For example - for the private farm truck:

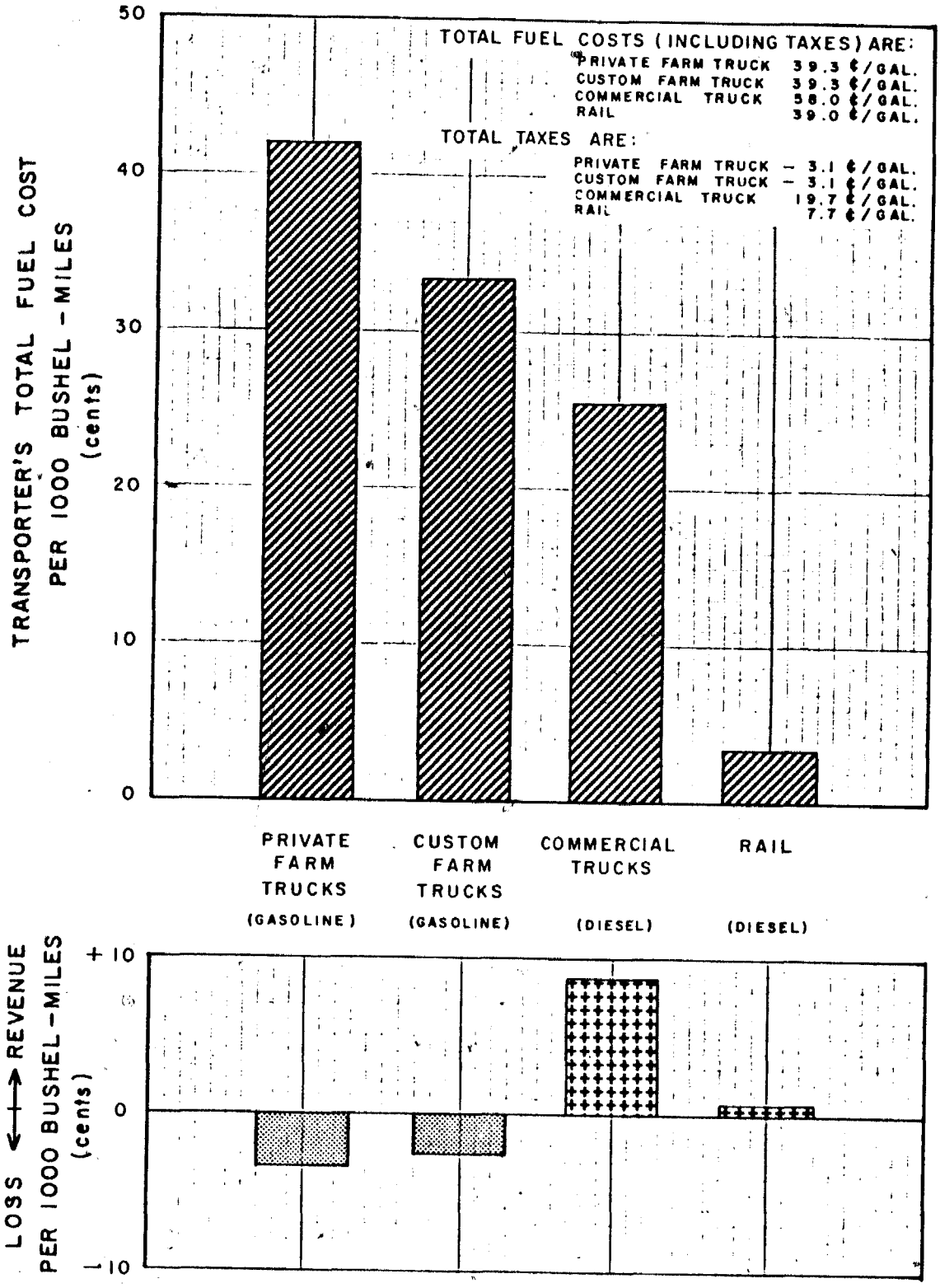
Consumption = 1.07 gallons (gasoline) per one thousand bushel-miles.

Price of gasoline (including F.S.T. and provincial rebate) = 39.3 cents per gallon.

Inverse transportation fuel cost efficiency = 1.07 x 39.3
= 42.1 cents per one thousand bushel-miles

FIGURE VIII-5

A MODAL COMPARISON OF TRANSPORTER'S TOTAL FUEL COSTS PER 1000 BUSHEL-MILES AND TOTAL TAX REVENUE (LOSS) PER 1000 BUSHEL-MILES AT SASKATOON - DEC. '75



The comparable ratios as developed for Brandon, Manitoba, and Red Deer, Alberta, are:*

	Brandon	Red Deer
Private farm truck vs. rail	15.2:1	12.8:1
Custom farm truck vs. rail	11.0:1	11.5:1
Commercial truck vs. rail	7.7:1	6.9:1

Over the prairies, it can be seen that the major difference between the ratios of modal fuel consumption efficiencies and modal fuel cost efficiencies is experienced by the commercial truck, which enjoys neither the bulk purchasing power of the railways, nor the preferential tax treatment of the farmer (or custom farm truck). In effect, while the commercial truck is 2.4 times as efficient as the private farm truck from the fuel consumption standpoint, while operating in grain assembly, it is only 1.8 times as efficient from the fuel cost standpoint. While fuel taxes account for less than 10 percent of fuel cost for farmers and railway, they account for one-third of the commercial truckers' fuel cost. The commercial truck, of course, is the only road mode which contributes direct tax to provincial governments for road construction and maintenance (if it is assumed that the "general" provincial fuel taxes are not ear-marked for road expenditures).

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* In calculating these ratios, all consumption rates are the same as discussed earlier, except for consumption rate for private farm trucks, which is estimated to be 1.17 and 0.95 gallons of gasoline per one thousand bushel-miles in Manitoba and Alberta respectively (equivalent to 17,800 and 22,450 pounds loaded direction g.v.w. respectively).

Energy Implications of Rail Line Abandonment

Comparative modal energy efficiencies developed in the previous section of this report contribute significantly to differences in total energy requirements of various rail-truck combinations which might be considered in any part of the grain handling and transportation system. Three factors were identified to account for variations as well:

1) variations in the average size of farm trucks between areas;

2) variations in the mix of commercial, custom and private farm haul between specific cases; and

3) variations in the extent of rail and truck circuitousness between specific cases.

Two specific cases were analyzed to determine the energy effects of change in an area upon removal of a branch line: (Table VIII-7).

1) The Brandon Area

This case considered the removal of 270 miles of light traffic density rail lines in the area northwest of Brandon. Changes in energy consumption were considered for both direct haul by farm truck from farms to closest elevators retaining rail service and for hauling from farm to the same alternate elevators by commercial trucks.

In both cases, of course, there was a saving in fuel consumed by the rail mode. It was found that with private farm trucking from farms to alternate elevators, the overall fuel

consumption increased by about 25 thousand gallons per year whereas by direct commercial trucking to on-line elevators, there was a net saving of 26 thousand gallons per year over the existing rail and elevator system.

2) The Carlton Area

This case considered closure of Canadian National's Carlton Subdivision, with detailed totalling of energy consumption changes for two different methods of operation in the area. In the first scheme of operation, grain would be delivered to the closest alternate on-line elevator by private farm truck, but in the second method of operation, grain was considered to continue moving to existing elevators by farm truck with commercial trucking from elevators on the abandoned line to closest alternates. All grain was considered to be routed through Langham Junction as a common point for furtherance in each operation.

It was interesting to note that in the first scheme with a shift of only about one percent of the affected handlings to the Blaine Lake Subdivision, the resultant extra circuitous routing produced nearly 27 percent of the total increased bushel-mile haulings for rail from all points experiencing increased handlings. This relatively small increase in circuitous routing then practically wiped out possible savings in rail fuel consumption which were brought about by direct trucking of grain to points closer to Langham Junction.

It was found that with private farm trucking to alternate elevators, the overall fuel requirement associated with grain assembly in the area would increase by about 12.4 thousand gallons per year, continued operation of off-line elevators with commercial trucking to on-line points resulted in an increase of 8.3 thousand gallons in fuel consumed per year.

Table VIII-7 summarizes the results of the various rationalization schemes and provides information on the changes in provincial and Federal fuel tax revenues and relates fuel cost savings or increases to bushels of grain delivered in the area.

Summary of Findings

From the results of the analysis of these specific rationalization scenarios, several observations can be drawn:

Firstly: For many of the branch-lines the effects of abandonment on fuel consumption requirements of the railways will be relatively minor.

To illustrate, abandonment of 270 miles of track in the Brandon area would decrease fuel consumption associated with related rail grain assembly by about 13 thousand gallons per year, or one-half of the quantity of fuel consumed by a typical five-axle commercial highway truck in a year. Abandonment of the Carlton Subdivision would reduce railway fuel requirements by a quantity of fuel which is less than that consumed by one typical automobile in a year.

There are two basic reasons for this. Firstly, the energy efficiency rate for rail is relatively high. Accordingly, large

TABLE VIII-7

RESULTS OF RATIONALIZATION SCHEMES IN THE BRANDON AND CARLTON AREAS

SCENARIO	CHANGE IN FUEL CONSUMPTION BY MODE - GALLONS			NET CHANGE IN FUEL USED	CHANGE IN FUEL COST RELATED TO GRAIN IN AREA	FUEL TAX REV. GOV'T GAIN OR LOSS ($)	
	Rail Diesel Fuel	Farm Truck Gasoline	Commercial Truck Diesel Fuel			Federal	Provincia
BRANDON AREA							
Direct Haul by farm truck to the closest elevators retaining rail service	-13,300	+37,700		+24,400 Gal. +$12,570	+1/16 ¢/Bu.	+ 980	- 660
Direct Haul by commercial truck to the closest elevators retaining rail service.	-13,300	-44,400	+31,400	-26,000 Gal. -$6,370	-1/32 ¢/Bu.	-1,050	+5,930
CARLTON AREA							
Direct haul by farm truck to the closest elevators retaining rail service	- 250	+12,600		+12,400 Gal. +$5,170	+1/3 ¢/Bu.	+ 480	- 890
Farm truck haul to original elevators and commercial trucking from these "off-line" points to closest elevators retaining rail service	- 950		+ 9,250	+ 8,300 Gal. +$5,200	+1/3 ¢/Bu.	+ 310	+1,440

changes in bushel-mile haul must be experienced to effect significant quantity adjustments. Secondly, for many of the specific branch-line cases, traffic would be re-directed from the abandoned line to effectively paralleling lines, tending to minimize changes in bushel-mile rail haul. Of course, isolated cases of highly circuitous rail routing would not fall into this pattern.

Secondly: Given abandonment and the continued extensive employment of small private farm trucks, consumption could increase substantially, but would not necessarily do so.

In the case of the Brandon area, where current haul distances are short, extensive abandonment produced a net fuel increase equivalent to the amount of fuel consumed by one typical commercial highway truck in a year. In areas where the proximity to alternative rail lines is less, greater effect, of course, would be observed.

Thirdly: Given abandonment, the increases in fuel requirements which would be experienced by attendant increases in private farm truck haul could often be more than offset by shifting grain haul to large commercial trucks.

An objective of energy conservation in grain assembly could be oft times better served by encouraging shifts from the small private farm trucks to large trucks, in place of continued encouragement of the extensive employment of small private farm trucks. As was illustrated for the Brandon area, fairly extensive branch-line abandonment, if accompanied with wide-scale employment of large trucks, can produce overall fuel savings.

Fourthly: The government revenue implications of changes in fuel consumption effected by rationalization are relatively minor. Nonetheless, it is interesting to note that provincial governments in particular can stand to gain revenue as a result of shifts from private farm truck haulage to commercial truck haulage of grain. As illustrated for the Brandon area, this gain in provincial revenue can occur even under circumstances wherein overall fuel consumption decreases.

As an overall general comment, it is reasonable to observe that the magnitude of the energy implications of many of the rationalization options, particularly when accompanied with increases in the employment of large trucks in the place of small trucks, would be very minor, and indeed so small as to be effectively immeasurable and unpredictable. If energy conservation onto itself is to be viewed as an important argument favouring the retention of branchlines, then in the same simplistic way, one should also argue, more strongly, for a significant shift from small private farm truck haul to large commercial truck haul of grain in the initial farm to elevator move. The first position only constrains growth in consumption, while the second position could effect decreases in consumption.

Energy in Perspective: Food, Fuel and the Farm

The introductory section of this Chapter and the section on Energy Resources and Consumption acknowledged current concern with regard to availability and use of energy and confirmed the need for

conservation of petroleum. Subsequent commission research findings with regard to fuel use in grain transportation were outlined in the sections dealing with Energy and Grain Transportation, Fuel Costs and Grain Transportation in Western Canada and Energy Implications of Rail Line Abandonment. This analysis demonstrated that there is no definite correlation between retention or rail service for local grain collection and the minimization of fuel consumption for the area presently served by rail. One might now ask, "What, then, is the potential for fuel savings within agricultural production and how does this relate to energy consumed in transportation of the product?"

Traditional agriculture, characterized by self-sufficient farming communities using solar-powered technology, produced about one thosuand pounds of food grain per acre per year.* The most efficient agriculture from an energy standpoint is this type of system in which each person grows and processes his own food. This is also the least productive system with respect to yield per acre and per unit of labour input.

Structural transformation of agriculture has permitted a three to four fold increase in efficiency with yields in typical mechanzied North American grain cropping ranging from two thousand to six thousand pounds per acre on average. This improvement has resulted, however, in a more energy intensive operation largely due to requirements of mechanization and other inputs such as fertilizer and pesticides. It has been estimated that on a strict grain heat unit value

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* Chancellor, William J. and Goss, John R. Balancing Energy and Food Production: 1975-2000. Agricultural Engineering, January 1976.

basis, for example, the ratio of energy output to input for corn production in the United States has decreased from 3.7:1 to 2.8:1 since 1947.*

Present world food demand and supply relationships and forecasts of population point to the need for more, rather than less, mechanization and modernization of agriculture. One must be careful, however, in concluding that such upgrading of production techniques should be limited or significantly altered because of the increase in relative energy consumption which normally accompanies such advances. Discussion of energy conservation within any sector of the economy should take place with full cognizance of the relative magnitude of consumption in society at large. For example, the U.S. Council for Agricultural Science and Technology estimated that field and farm production accounted for only about 1.5 to 3.0 percent of that country's energy consumption.

Further analysis of energy consumption in the food chain provides some insight into the relative potential for savings. Figure VIII-6 illustrates results of current compilation of data for North American conditions. It is interesting that production and transportation each account for approximately one-sixth of the energy which goes into food for human consumption.

In consideration of prairie agriculture and grain transportation, it is perhaps more relevant to quantify and compare fuel consumed in the production of a bushel of grain and the fuel required to trans-

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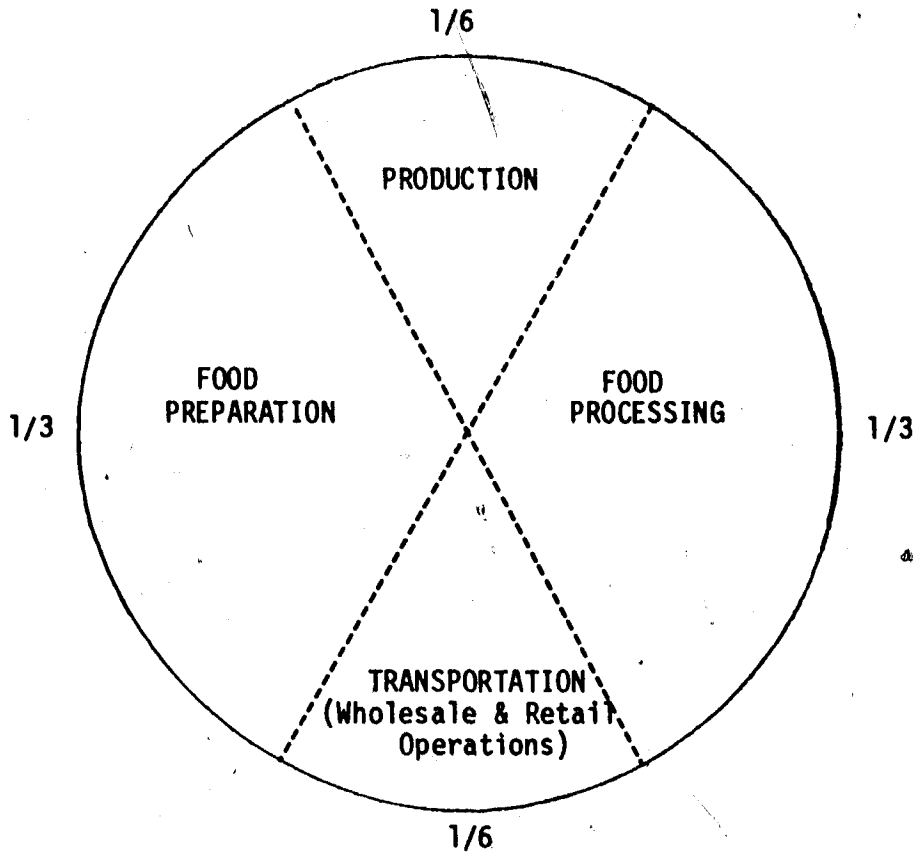
* Hall, Carl W. Energy and Agricultural Engineering. Agricultural Engineering, March 1975.

FIGURE VIII-6

FOOD ENERGY INPUT FROM FIELD TO TABLE
UNDER CONDITIONS OF MODERN TECHNOLOGY



port this same unit to port.. A recent study* concluded that fuel consumption on Saskatchewan farms averaged about four gallons per cultivated acre. It is interesting to relate this value to production and the findings of this Commission's study of fuel consumption in grain transport. Analysis shows that farm fuel consumption accounts for approximately one-third of a gallon of fuel per bushel while transportation to port accounts for about one-tenth of a gallon per bushel with the truck portion of this total movement accounting for approximately one hundredth of a gallon.

Focusing on agricultural production, considerable energy savings can result from better management at the farm level. Changes from gas to diesel powered equipment combined with improved operation, maintenance and design of agricultural equipment will reduce fuel consumption. Better matching of tractor power to load, proper field adjustments and shifting up one or two gears with reduced engine revs to obtain desired travel speeds on lighter loads all result in lower fuel requirements. There may also be significant potential for fuel reduction by future changes in cultural practices such as reduced tillage.

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* Bigsby, F. and Strayer, R. Agricultural Engineering Department Study. University of Saskatchewan, 1976.

CHAPTER 9

ECONOMIC DEVELOPMENT

ECONOMIC DEVELOPMENT

In conducting a comprehensive evaluation of regional transportation requirements, this Commission has been instructed to consider the implications of adjustments to the grain handling and transportation system as they relate to economic development opportunities in terms of agricultural processing, manufacturing and natural resource development. In its analysis of specific regional transportation requirements, the Commission has given weight to provincial economic plans and forecasts and to the location of potential industries in making recommendations regarding the disposition of specific rail lines.

A recurring concern expressed at numerous public hearings has been the detrimental effect of discriminatory freight rates and other transport related distortions affecting the economic development of the Prairie region. An analysis of freight structures confirms that the prairie provinces have been victimized by discriminatory freight rates from the beginning.

The current review of the grain handling and transportation system has provided the Commission with an opportunity to observe not just the grain handling and railway system but to see all of Western Canada in true perspective, to visit with and listen to thousands of farmers, small town merchants, municipal officials and youth.

The Commission emerged from this undertaking with a feeling of great faith in the future of Western Canada. The optimism of the pioneers persists undiminished but the Commission sensed frustration

and disappointment by many Western Canadians in Western Canadian development. Feelings exist that Western Canadians are the source of someone else's affluence and to a degree they blame the transportation system for their frustrations.

Transportation in Western Canada is a most important component of its economic and social structure. It has since before Confederation been an instrument of public policy and a tool of development. The rapid settlement of Western Canada was attributable to the federal government's grants of land and railway building franchises to colonization companies as well as to railway companies to provide access to the hinterlands. These developments were aimed at taking advantage of the great resources of Western Canada. Since early development the thrust has been to move raw materials to industrial Central Canada for refinement and consumption.

In the early days of labour intensive agriculture the population of Western Canada exploded and communities prospered as the needs of the developing area were met. However, as agriculture settled into permanency, as the more productive areas took on stability and the less productive areas were vacated, the nature of Western Canada's community structure changed. The application of technology to agricultural production allowed expansion of farm size and a decrease in farm labour. The products of agriculture have continued to flow out of Western Canada in their raw form. Therefore employment opportunities and opportunities for population expansion in Prairie Canada have not kept pace with the expansion in the rest of the country. The

transportation system which was developed to open the West has served well but some of the policies associated with transportation have permitted the system to continue to drain the West of employment and development opportunities.

The continuous shift of an ever increasing proportion of the population to urban central Canada has been aggravated by the retention of policies which favour maintaining the west as a source of raw goods, and carrying out processing next to the populous centres of the East.

All Canadians have been the beneficiaries of low rate transportation policies over the years which have allowed Western grain producers to compete in the international market. Grain exports have been a leading contribution in Canada's international balance of payments. However, there is little doubt that Canada has paid dearly and will continue to increasingly pay for the pitfalls of the policy which shifts the development of secondary processing from the natural advantage areas to the high cost areas of the country.

The transportation of raw agricultural products, wheat, feed grains, malting barley, and oil seeds, constitute many more ton miles of freight haul than would be the case if secondary processing took place close to the source of production.

Examples of transportation related distortions are referred to later in this chapter.

This waste of essential transportation services is a great cost to all Canadians. The dislocation of secondary agricultural processing caused by inequitable policies has in part been responsible for the

fact that Western Canadian communities are empty of people and opportunities to the frustration of many Western Canadians. These regional disparities of economic opportunity will continue to grow unless more deliberate efforts are made to reduce them. One of the most logical tools for the achievement of this end is the transportation system. It is through this system that the advantages of concentration of a product or secondary processing in Western Canada must be encouraged for the benefits of all Canadians. In the case of domestic movement of agricultural products the Commission recommends that a reversal of transportation policy be considered wherein all unnecessary transportation of goods be avoided and the most efficient mode of transport be used for each commodity. In principle, therefore, the first item deserving of attention in the establishment of transportation policy relating to agricultural products would be a freight structure in which the processed product in its concentrated form should cost no more to transport on a per ton basis than the same product in its raw state.

In this report the Commission is putting forth a series of recommendations all aimed at enhancing the efficiency and effectiveness of the transportation system in Western Canada. The Commission is aware that national transportation policies along with changes in the system are necessary if Western Canadians are to fully share in our national developments. The Commission is recommending physical and institutional changes to the system. Policy changes are the responsibility of government.

In this chapter, the Commission comments on why processing plants locate where they do, freight rates and other transport related distortions as they affect flour milling, rapeseed crushing, livestock production and processing, and the malting industry.

In its examination of economic development of the Prairie region, the Commission subscribes to the following principles:

1) The Prairie region of Canada is basically an exporting region, and hence a major contributor to Canada's favourable balance of payments position. Current and future transportation policies should not detract from this position but should recognize its importance in the national interest.

2) The production and processing of agricultural products should take place in regions which enjoy natural locational advantages for such activities. Freight rates and other transport related policies should not destroy these natural locational advantages.

Why Processing Plants Locate Where They Do

Industries may be divided into three groups depending on the type of location decisions that they make. Industries are said to be input-oriented if in the long-run they locate new processing capacity near the source of inputs (materials, energy, labour, water, etc.). Similarly, industries are said to be market-oriented if new capacity is located near potential markets. The third type of industry is one that is tied neither to input sources nor the market and is called foot-loose.

There usually exists some natural advantage in locating a firm in some areas over others. For example, a manufacturing firm located

near the source of inputs for its product has a locational advantage if:

1) the manufacturing process involves a significant weight decrease,

2) the freight rates are higher for the raw material than for the product,

3) the process results in a product which is easily stored and transported, or

4) by-products of the process are more profitably disposed of at that location than at another.

If the reverse conditions exist for an industry, then those firms located near the market will have a locational advantage.

Firms in some industries have natural locational advantages if they are located near a cheap or abundant source of inputs (other than raw products). Many industries, for example, must be situated near a source of specialized labour, or abundant water.

Locational advantages are not static, however. A number of factors tend to increase or decrease the locational advantages of an area. Some of these factors include:

1) changes in technology in the processing industry,

2) changes in technology in the transportation industry,

3) changes in the freight rate structure,

4) changes in market demand,

5) changes in supply of raw materials or other inputs,

6) changes in government regulation of the industry, and/or

7) changes in subsidy levels or qualifications.

In the short run when capacity cannot be increased, decreased or relocated, changes in the determinants of locational advantage will affect, instead, the profitability of firms. The effect of these changes will vary with the location of the firms in the industry, improving the profitability of some relative to others.

Also, there are 'natural' locational advantages as opposed to 'created' locational advantages. Any variation from a 'natural' locational advantage is a distortion. It is difficult to define distortions resulting from freight rates and transport policies because of the long standing nature of policies such as statutory rates on grain and Feed Freight Assistance. For many people, these policies are 'natural' rather than being distortions. Despite the difficulties involved in describing the 'natural' competitive environment of many industries, it is possible and indeed very useful to explore the effects of certain 'distortions' (or groups of 'distortions') on the locational advantage of firms. However, it should be kept in mind that the remainder of this chapter considers only freight rate and other transport related distortions, and not any of the other factors that may lead to changes in the location of agricultural processing.

The Flour Milling Industry

Canadian flour production has declined some 30 percent from its peak of 56 million hundredweight in 1946-47 to 39 million hundredweight in 1974-75. At the same time, a significant shift has taken

place in the location of flour production in Canada. In the mid 1950's approximately 52 percent of the flour produced in Canada was milled east of the Lakehead. In 1974-75 these market shares had shifted to 69 percent milled in Eastern Canada and 31 percent milled in Western Canada.

TABLE IX-1
MILLINGS OF WHEAT BY EASTERN AND WESTERN MILLS

Year	Millions of bushels milled			% Milled	
	East	West	Total	East	West
1954-55	44.2	48.2	92.4	47.8	52.2
1955-56	44.3	47.5	91.8	48.3	51.7
1956-57	42.6	42.5	85.1	50.0	50.0
1957-58	46.8	45.4	92.3	50.8	49.2
1958-59	45.8	44.3	90.1	50.9	49.1
1959-60	44.4	46.9	91.4	48.6	51.4
1960-61	43.1	46.6	89.7	48.0	52.0
1961-62	43.9	44.4	88.2	49.7	50.3
1962-63	44.5	34.3	78.8	56.4	43.6
1963-64	51.9	59.7	111.6	46.5	53.5
1964-65	49.3	37.9	87.2	56.5	43.5
1965-66	52.3	45.6	97.9	53.4	46.6
1966-67	51.6	38.5	90.1	57.3	42.7
1967-68	49.3	35.5	84.8	58.1	41.9
1968-69	55.0	30.0	85.0	64.7	35.3
1969-70	60.9	29.6	90.5	67.2	32.8
1970-71	59.9	27.5	87.4	68.5	31.5
1971-72	60.3	27.8	88.1	68.5	31.5
1972-73	60.2	26.1	86.3	69.7	30.3
1973-74	59.5	25.1	84.6	70.3	29.7
1974-75	61.2	27.7	88.9	68.9	31.1

An examination of the milling industry in Canada - "Transportation Related Distortions in the Canadian Flour Milling Industry" - Volume II,

suggests that the industry may be quite market-oriented for the domestic use of flour but that for export flour, the mills located near the raw material have a locational advantage. Since Western mills have traditionally produced flour for the export market, and since this market has declined significantly, there has been a disproportionately higher amount of over capacity in the Western mills.

The Commission found through its study of this industry that the application of certain government programs, of Canadian Wheat Board selling practices, and of ancillary rail charges offset the natural geographic advantage Western mills should enjoy.

When Western mills receive wheat from primary elevator companies, the Canadian Wheat Board collects on behalf of the grain company a three cent per bushel 'diversion charge' in lieu of terminal elevator revenues. This charge was recently renamed a 'selection' charge. Mills are required to pay an additional 1.5 cents per bushel if the wheat they secure contains less than 1.0 percent dockage. Eastern mills do not pay any of these charges.

One of the natural or locational advantages of locating a flour mill near the source of wheat is the reduced need for storage. The inventory requirements of a Western mill are less than one month's grind. Eastern mills on the other hand require higher storage levels. At the close of navigation in the St. Lawrence Seaway, Eastern mills will require as much as six months' supply of wheat on hand. Since the Canadian Wheat Board pays storage and carrying costs, the Western

grain producer pays the cost of equalizing the storage and carrying costs of Eastern and Western mills.

The instore Thunder Bay price for wheat includes a number of costs which the Canadian Wheat Board incurs. These costs are associated with the services rendered by the Canadian Wheat Board and include inspection, freight, terminal elevation, cleaning and the Canadian Wheat Board administration costs. Western mills buy wheat at this price less freight. They must therefore pay for the other services despite the fact they do not receive them. This is indefensible.

The railways charge 18 cents per hundredweight stop-off fees on domestic flour shipments. Western mill rail origins of wheat milled and forwarded as domestic flour are subject to this 18 cent charge. Eastern mills receiving their grain supplies by water from Thunder Bay do not pay this charge. Both Eastern and Western mills are subsidized for stop-off charges on export flour. By virtue of section 329 of the Railway Act, the Federal Government made statutory a three cent per hundredweight Eastern stop-off charge. Stop-off charges in the West have not been frozen by statute. In the West the railways have been free to establish stop-off charges at whatever level they wished. In 1973 the Federal Government, recognizing the discriminatory effect of the frozen eastern stop-off charge implemented a stop-off rebate. This rebate amounts to 7.5 cents per hundredweight of export flour from Western mills. The net result is the Eastern mills are subsidized 15

cents per hundredweight, the Western mills, 7.5 cents per hundredweight.

The Commission recommends:

1) That the flour milling industry in Canada be permitted to enjoy the natural geographic advantage of locating in Western Canada.

2) That the Canadian Wheat Board re-assess its costs of services performed for this industry and to ensure that its pricing practices do not distort the regional locational advantages of this industry.

3) That the Canadian Wheat Board discontinue the discriminatory practice of paying interest and storage costs on wheat held for milling at any point in Canada.

4) That the railway stop-off charge for storage and milling of grains in Western Canada be eliminated.

The Rapeseed Crushing Industry

Rapeseed production in Western Canada grew from scant beginnings in 1943, at which time there was a planting of around 4,800 acres to a substantial 4.3 million acres in 1975 and a crop of 77.1 million bushels (Table IX-2). By 1975, rapeseed represented seven percent of the total Canadian crop acreage and was the most important Canadian oilseed. The 1976 acreage, however, plunged to around 2.0 million acres, largely due to a substantial carryover of 42.3 million bushels of rapeseed from the previous crop year, large stocks of U.S. soybeans, and resulting lower price expectations.

Demand for rapeseed results mainly from export demand and from domestic crushing requirements. Exports of raw rapeseed have been sizable and in 1975-76 amounted to 30.1 million bushels. This represented 39 percent of the 1975 rapeseed production. Domestic crushing of rapeseed represents the next largest source of demand for Canadian rapeseed. 1975 crushing amounted to 14.0 million bushels. The bulk of this crushing is for domestic purposes. Exports of rapeseed products have not fared as well as those of the raw seed; exports of both oil and meal have been relatively low and declining. Oil exports amounted to 43.7 million pounds, and oilcake and meal exports were 45.6 million pounds in the 1975 calendar year (including concessional or aid shipments). Preliminary estimates for 1976 suggest that crushings and exports will be somewhat higher.

Aside from a small amount of rapeseed crushing by a now defunct Montreal plant, all Canadian rapeseed crushing has occurred in the

western provinces. These western crushers, however, are dependent on the eastern Canadian market as an outlet for rapeseed meal and oil. It is estimated that 75 percent of the 1975 rapeseed crushings were marketed in Eastern Canada, and the remaining 25 percent was exported or utilized in Western Canada.

TABLE IX-2

Canadian Rapeseed Acreage, Supply and Disposition

(1965 - 1976)

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
	..... millions bushels											
ACREAGE	1.4	1.5	1.6	1.1	2.0	4.1	5.3	3.3	3.2	3.2	4.3	2.0
SUPPLIES												
Stocks (Aug. 1)	1.3	3.3	6.0	9.7	5.3	3.7	11.0	43.1	20.7	12.4	17.6	42.3
Production	22.6	25.8	24.7	19.4	33.4	72.2	95.0	57.3	53.2	51.3	77.1	41.4
Total	23.9	29.1	30.7	29.1	38.7	75.9	106.0	100.4	73.9	63.7	94.7	83.7
EXPORTS	13.6	13.8	12.3	14.3	22.2	46.8	42.6	54.0	39.2	26.1	30.1	
DOMESTIC DISAPPEARANCE												
Crushings	3.7	5.0	5.2	6.9	7.8	8.6	12.0	15.6	14.7	12.2	14.0	
Seed Dockage etc.	3.3	4.3	3.5	2.6	5.0	9.5	8.3	10.1	7.6	7.8	8.3	
Total	7.0	9.3	8.7	9.5	12.8	18.1	20.3	25.7	22.3	20.0	22.3	
STOCKS (July 31)	3.3	6.0	9.7	5.3	3.7	11.0	43.1	20.7	12.4	17.6	42.3	

There are five crushing and processing plants presently in operation in Western Canada, all of which are devoted almost exclusively to the crushing of rapeseed and the production of crude or refined rapeseed oil. Present total crushing capacity is in the order of 3,400 tons per day, or slightly more than one million tons per year. Three more crushing plants are in various stages of construction and will further increase capacity by 1,920 tons per days or 576,000 tons per year. 1975-76 rapeseed crushings represented a utilization of only 52 percent of capacity, ignoring the fifth plant which was brought into operation in the spring of 1976. Even conceding the crushing of the entire sunflower crop and small amounts of soybeans, there is no problem of insufficient crushing capacity in the West. Indeed, temporary shut-downs and the suspension of contracting for acreage throughout much of 1976 indicate that overcapacity has become a serious problem.

The major transport related restrictions on the movement of the rapeseed derivatives centre on the transport rates, in particular, on the level of rates and the transport rate differential. The level of the transport rates on rapeseed, rapeseed oil and rapeseed meal have been the subject of some concern in recent years. In July, 1945, the statutory rates were extended to include the early products of rapeseed processing, rapeseed meal oil cake and rapeseed oil cake. In August, 1961, the statutory grain rate was extended to cover rapeseed, rapeseed screenings and rapeseed meal transported to Thunder Bay, and was extended only to rapeseed to Vancouver for export.

Beyond Thunder Bay, rapeseed for export was allowed the export grain rate.

Domestic rapeseed destined for eastern crushing was allowed an extraordinarily low water-competitive rate of 42 cents per 100 pounds in 1970, or 44 cents per 100 pounds, effective 1971. Rapeseed meal was allowed the transit privilege and the statutory rate to Thunder Bay, but was subject to the relatively high commodity rates beyond. Oil, however, which has been the rapeseed derivative of primary economic concern, travelled entirely under agreed rates. The application of the higher rates to meal and oil, when contrasted to the total through-rate allowed the eastern crusher, placed the western crusher at a severe disadvantage which was not related to location, as determined by the Canadian Transport Commission in 1973. The 1973 Canadian Transport Commission Decision narrowed the differential between the rates on the seed and the total rates on the equivalent oil and meal movement by applying the same rate to rapeseed meal as to raw seed east of Thunder Bay, and by freezing the agreed rates which applied to the oil movements.

The freight rate differential still exists,however, as the following examples from the Perkins study* illustrate. The cost of moving 100 pounds of rapeseed from Lethbridge to Montreal was a combination of the statutory rate to Thunder Bay (26.5 cents per 100 pounds)

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* P.R. Perkins, An Economic Review of Western Canada's Rapeseed Processing Industry, November, 1976, p. 89.

and the commodity rate beyond (44 cents per 100 pounds) for a total of 70.5 cents per 100 pounds. The cost of moving the equivalent amount of oil and meal is calculated to total 90.2 cents. The disparity between the freight rates on the processed versus the raw product is 19.7 cents. Using Vancouver as a destination, the cost of moving 100 pounds of rapeseed for export from Lethbridge was 23.5 cents per 100 pounds. The cost of moving the equivalent amount of oil and meal (41 pounds of oil at 85.0 cents per 100 pounds and 57 pounds of meal at 51.0 cents per 100 pounds) is calculated to be 65.9 cents per 100 pounds. The disparity between the processed versus the raw product is 40.4 cents in this case. This disparity is intensified because meal to Vancouver (unlike to Thunder Bay) moves at rates considerably higher than statutory rates. Although some of the rates on rapeseed meal and oil have changed as a result of the Canadian Transport Commission Order R23976 on November 26, 1976 (which established rates at "minimum compensatory levels"), the basic disparities still remain.

The disadvantage to the western crusher as a result of the freight rate structure is not limited to this simple rate differential. Further disadvantage arises from the effect which the freight rate has upon the pricing system. The price which western crushers pay for raw rapeseed is determined by the Vancouver market minus the low statutory rate to Vancouv (the Altona plant is generally the only plant to purchase rapeseed on the basis of Thunder Bay). The prices for rapeseed meal and oil, however, are determined by the Toronto market in conjunction with Chicago

soybean markets. The price which the western crusher receives is based on the eastern price, minus the relatively higher freight rates eastward. The "market disparity" which then arises is calculated to be the difference between the product equivalent of 100# of seed (90.2 cents) and the statutory rate on seed to Vancouver (23.5 cents) for a "market freight cost disparity" of 66.7 cents on the Lethbridge to Montreal movement.

There are two major transport related charges which the crushers must pay in addition to the cost of movement, and there is, in addition, a premium or allowance which the railway grant the crushers. Inasmuch as these charges and allowance differ from that which is levied on other users of the railway system, they must be construed as discriminatory. There is a charge of 14 cents per 100 pounds which is levied by the railways on the movement of rapeseed meal in hopper cars. This charge is not applied to the movement of soybean meal into or within eastern Canada. Crushers must supply the tank cars for the movement of rapeseed oil. Tank cars may be purchased or leased at a charge of approximately $450 per month (jumbo 75 ton tank car). The railways allow the rapeseed crusher 9.5 cents per loaded mile, although other shippers are allowed 12 cents per loaded mile for the use and provision of these cars.

On April 13, 1976, Order-in-Council, P.C. 1976-894 decreed that all rates on the movement of rapeseed oil and meal from the four western plants (Altona, Nipawin, Saskatoon, and Lethbridge) which had appealed the previous rate structure, were to be increased

to the "minimum compensatory level". The Federal Government had for some time been advocating a cost-based system of freight rates with the principle of "user pays". Transport rates on rapeseed, rapeseed oil and meal, had been effectively frozen at historical levels which bear little relation to the costs of service which the railways claim and which have been substantiated by the Commission on Rail Costing (Snavely Commission) to be 2.58 times the statutory rate. Implementation of the April 13 Order was delayed to await the finding of the Sanvely Commission. The "minimum compensatory" rates were to come into effect after October 30, 1976, although in the interim, the existing rates were extended as of August 1 to the Lloydminster plant. On November 26, 1976, the Canadian Transport Commission issued Order No. R-23976 which established these "minimum compensatory" rates. However, this Order has been appealed by western rapeseed crushers.

A $2.5 million federal program for the subsidization of western rapeseed processors was also proposed. On November 26, 1976, the Federal Transport Minister indicated that the plan would provide some $500 thousand in the current fiscal year, with the balance available in the 1977-78 fiscal year. The purpose of this subsidization is to minimize the initial impact of the "minimum compensatory rates" on the movement of rapeseed derivatives.

The Commission recommends:

1) that freight rates on rapeseed and its derivatives be set at levels which do not discriminate against

the natural locational advantage of Prairie rapeseed crushers;

2) that inequities in freight rates, such as those that exist on the movement of rapeseed meal through Vancouver and Thunder Bay, be eliminated;

3) that the railways eliminate the additional charge of 14 cents per 100 pounds levied on the movement of rapeseed meal in hopper cars;

4) that the railways provide the same mileage allowance for tank cars used by rapeseed crushers as they do for other shippers;

5) that the Federal Department of Industry, Trade and Commerce devote more effort to export market development for rapeseed meal and oil.

Livestock Production and Processing*

-- Livestock Production

The number of cattle slaughtered in Canadian inspected establishments totalled 3,676,000 in 1976 and this represented a 36 percent increase over the figure 10 years earlier in 1966. The number of slaughterings did not show any increase in the late 'sixties and even by 1974 slaughterings were only nine percent above the 1966 figure. The economic returns from the production of beef cattle have, of course,

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*Much of the factual material in this section on livestock production and freight rate comparisons is taken largely from a report entitled Transportation Factors and the Canadian Livestock and Meat Industries: An Updated Summary which was prepared by Dr. John Heads of the Canadian Transport Commission in February, 1977. The conclusions and recommendations are the responsibility of the Grain Handling and Transportation Commission.

been very depressed over the last two years and the number of slaughterings increased by 13 percent in 1975 and by 10 percent in 1976.

In 1976, British Columbia, Alberta, Saskatchewan and Manitoba accounted for 62.7 percent of total Canadian cattle slaughterings, as against 56.6 percent in 1966. The western share of Canadian cattle slaughterings was increasing during most of this period. Alberta is the most important cattle producing province and its share of Canadian slaughterings was 42 percent in 1976 as against 30 percent ten years earlier. This increase of 12 points in the Alberta share was offset by a decline of six percentage points in Ontario and a similar decline of six percentage points in the three other western provinces.

The slaugher of calves is much less significant than the slaughter of cattle. In 1976, the total slaughter of calves in Canadian inspected establishments numbered 655 thousand, equivalent to little more than one-sixth of the slaugher of cattle. The slaughter of calves was declining each year from 1966 to 1973, but showed some increase in 1974. As a result of low economic returns from the production of beef cattle, calf slaughterings increased very substantially in 1975 and remained close to this level in 1976. Nevertheless, the total 1976 slaughter was still 14 percent less than a decade before.

The Canadian calf slaughter is heavily concentrated in Quebec, which accounts for over three-fifths of the total. Western Canada

accounted for only 15 percent of Canadian calf slaughterings in 1976 and this was less than its 1966 share of 25 percent.

The number of hogs slaughtered in Canada was 7,491,000 in 1976 and this represented an increase of 22 percent on the figure for 1966. However, hog production fluctuates from year to year and the 1976 slaughter was in fact only marginally above that recorded in 1967. Following the difficult economic conditions in grain farming in the late 'sixties', the slaughter of hogs peaked in 1971. Hog slaughterings showed a particularly large decline of 14 percent in 1975 with a further decline of two percent in 1976.

Hog production was always much less concentrated in Western Canada than cattle production and in 1966 the four western provinces accounted for just under 40 percent of total Canadian hog slaughterings. The western share peaked at 48 percent in 1971, but by 1974, it was back to 43 percent. In 1975, this share fell to 36 percent, which was the lowest figure recorded in the previous decade, and by 1976 it was down to 33 percent. British Columbia slaughterings were negligible in 1976, while Alberta slaughterings were less than a decade before. Although slaughterings had increased in Saskatchewan and Manitoba, the large shift in hog production had been to Quebec, which accounted for 31 percent of the Canadian total in 1976 against only 17 percent in 1966.

Movements of Livestock and Meat from Western Canada to Eastern Canada

The movement of cattle and calves from Western Canada to Eastern

Canada is substantial. According to Agriculture Canada Livestock Market Review estimates, the number of cattle and calves moving by rail from Western Canada to Eastern Canada was 512 thousand in 1974 and 626 thousand in 1975. Provisional figures for the rail movement in 1976 show this down to 415 thousand. In 1974, slaughter cattle accounted for 26 percent of the movement, feeder and stockyard cattle for 21½ percent, and calves for 52½ percent. This distribution of the movement would suggest an average weight per animal of approximately 625 pounds and hence a total 1974 movement of 160 thousand tons. Truck movements of fresh, frozen, cured and ready-cooked meat amounted to 157 thousand tons, thus making a total movement of approximately 330 thousand tons in 1974.

Thus, in 1974, the rail mode was only slightly more important than highway in the movement of meat from Western to Eastern Canada, while the movement of live cattle was predominantly by rail. Trade sources have indicated that a greater proportion of live cattle moved by highway in 1976 and that the highway mode has also increased its share of the meat movement.

On the basis of 1974 data, the rail movement of live cattle was predominantly to Ontario, which was the destination of 84 percent of total shipments by weight from Western Canada to Eastern Canada. Quebec received 14 percent of these shipments and the Atlantic provinces accounted for only two percent. The smaller movement of animals by highway was almost entirely to Ontario. Turning to meat, Quebec received 78 percent of the 1974 movement by rail from Western

Canada to Eastern Canada, against seven percent to Ontario and 15 percent to the Atlantic region. However, Ontario was rather more important than Quebec as a destination for the 1974 highway movement of meat. Considering rail and highway together, Quebec received 63 percent of total meat shipments from Western Canada to Eastern Canada, Ontario 27 percent, and the Atlantic region 10 percent.

The movement of 512 thousand cattle and calves from Western Canada to Eastern Canada in 1974 was equivalent to some 15 percent of total Canadian slaughterings. In 1975, this appears to have edged upwards to about 15½ percent.

Shipments of live hogs from Western Canada to Eastern Canada are unimportant. The movement by rail in 1974 was only some two thousand tons and the highway movement was shown as only slightly more than this. This would imply a total movement of no more than 45 thousand live hogs, equivalent to only 0.5 percent of the total Canadian hog slaughter.

-- Markets

The figures of Canadian slaughterings of Cattle, calves and hogs quoted above relate to domestic production plus imports less exports, so that there is no need to adjust these figures in examining the availability of meat produced in Canada. However, in 1975, Canada exported 224 thousand head of cattle against an import of 130 thousand. The net export of 94 thousand head of cattle was equivalent to some two and one-half percent of total Canadian slaughterings of cattle

and calves. The net export was considerably higher in 1976, amounting to 186 thousand head of cattle on January/October figures. Canadian imports of swine are confined to purebred stock and are negligible in number. The export of swine amounted to 31 thousand head in 1975, and 39 thousand in January/October 1976; there were considerable reductions on the 1974 figure of 197 thousand with the 1975 export equivalent to only 0.4 percent of Canadian slaughterings.

Canadian beef imports amounted to 64 thousand tons in 1975 and this was considerably in excess of exports of only 13 thousand tons. This net import of 51 thousand tons of beef was equivalent to five and one-half percent addition to total Canadian domestic production. Both imports and exports of beef showed sharp increases in 1976, but the net import in January/October 1976 was also 51 thousand tons. The Canadian import of pork in 1975 was 44 thousand tons, and the export, 41 thousand tons. The net import was therefore equivalent to only 0.5 percent of Canadian domestic production. As a result of sharply increased imports, the net import of pork increased to 34 thousand tons in January/October, 1976.

In 1975, Western Canada accounted for 27 percent of Canadian population and this was also roughly the Western Canadian share of total beef and pork consumption. However, it has been suggested that relatively few Canadian beef and pork imports go to Western Canada, while the prairie provinces provide a large proportion of Canadian exports. It can therefore be assumed that Western Canada perhaps consumes some 30 percent of Canadian beef and pork production.

Table IX-3 shows the estimated disposition of Western Canadian production of cattle and calves and hogs in 1975. Some 70 percent of Canadian cattle and calves originated in Western Canada and the flow of cattle, calves and beef to Eastern Canada was equivalent to some 40 percent of total Canadian production in 1975. It is estimated that some 15½ percent of this moved as live animals and the remaining 24 percent as beef; this means that the proportion moving live was perhaps some three percentage points higher in 1975 than in 1974. With the significant reduction in hog slaughterings in Western Canada in 1975, the net flow of hogs and pork to Eastern Canada was equivalent to only six and one-half percent of total Canadian production; in 1974, this was as high as 13 percent. The movement of hogs is negligible and virtually all shipments are in the form of meat.

TABLE IX-3

Production, Slaughterings and Flows Percentage Shares of Total 1975 Canadian Production

	Cattle and Calves	Hogs
	%	%
Animals originating in Western Canada	69½	36½
Animals moving live to Eastern Canada	15½	½
Slaughterings in Western Canada	54	36
Of which, Western Canadian Utilization	30	30
Shipments as meat to Eastern Canada	24	6

--The Livestock Processing Industry

The modern packing plant works with assembly line precision converting livestock into meat. Plants may slaughter one or more species of livestock, but a different production line is required for each. A plant may process the carcasses into a wide range of consumer products or sale of carcasses may be made direct to the retailer, as is the common practice with beef. Another alternative is to sell carcasses to another plant for further processing.

At present, slaughter and chill plants predominate on the prairies. Most of the secondary process including cutting, boning, rolling, curing, smoking, tying and boxing are done in Eastern Canada. Of the processing operations mentioned, the capacity for slaughtering, chilling, cutting and boning constrain the output of most plants. Table IX-4 lists the percentage of slaughter capacity used in packing plants in 1974-75. As one would expect,production cycles lead to fluctuations in slaughterings. Only Ontario utilizes its packing plants to levels beyond 75 percent of capacity. British Columbia has the greatest excess processing capacity of any region with only 43.7 percent of cattle slaughter capacity and 24.6 percent of hog slaughter capacity being used. The Prairies and the Maritimes also are underutilizing the existing processing facilities in this comparison.

Table IX-5 shows the number of packing plants, the number of man-hours of work and the value added in slaughtering and meat processing. Of the 487 packing plants in Canada, 22 percent or 106 plants

were located in the prairie provinces. However, these same plants accounted for 31 percent of its value added and 31 percent of the total number of persons employed in the processing industry. There were fourteen more plants in 1974 than in 1973 with the majority of these plants being located in Ontario and Saskatchewan.

TABLE IX-4

Percent of Slaughter Capacity Used In Meat Packing Plants, 1974-75

Region	Species	Jan. 1974 to July, 1975
Maritimes	Cattle	51.8
	Hogs	49.0
Quebec	Cattle	65.7
	Hogs	66.3
Ontario	Cattle	76.7
	Hogs	80.8
Prairies	Cattle	55.5
	Hogs	42.0
British Columbia	Cattle	43.7
	Hogs	24.6

SOURCE: J.L. Morris and D.C. Isler, Processing Capacity in Canadian Meat Packing Plants, prepared for Food Prices Review Board, August, 1975, P.4.

TABLE IX-5

Slaughtering and Meat Processors, Establishments Man-hours, and Value Added, 1965 and 1974

	No. of Establishments			Man-Hours Paid Production Workers (thousands)			Value Added (Thousands of Dollars		
	1965	1975	% increase	1965	1975	% increase	1965	1975	% increase
Maritimes	26	25	(4)	1,597	814	(49)	7,764	10,515	35
Quebec	129	134	4	10,427	11,759	13	60,500	134,267	122
Ontario	134	179	34	18,001	18,904	5	102,744	265,348	158
Prairies	73	106	45	14,016	15,507	11	80,064	207,295	159
B.C.	37	43	16	2,603	2,896	11	16,187	39,490	144
Total	399	487		46,644	50,608		267,259	668,035	
Prairies Share of Total	18%	22%		30%	31%		30%	31%	

SOURCE: Statistics Canada, Slaughtering and Meat Processors, 1965, 1974

The location of a processing plant depends upon a number of factors including:

a) freight rates on livestock, suspended meat and boxed meat;

b) freight rates on by-products and the price difference of the by-products between regions;

c) shrinkage;

d) marketing costs; and

e) financing.

The Feed Freight Assistance Program

At the start of World War II, the Government of Canada was faced with the problem of increasing livestock production because of overseas wartime demands. At that time, there were price controls, and large quantities of surplus wheat on the prairies. In 1941, legislation was introduced to encourage feed grain as opposed to wheat production, and under which a subsidy would be paid on the transportation of feed grains from the prairies to points in Eastern Canada and British Columbia. The essential objective of the program (even up to the present time) has been to bring about some form of regional equalization, or at least to reduce some of the regional variation, in feed grain prices in Canada through a subsidy.

Over the last 11 years, the annual volume of feed grains shipped under the program has ranged between 2.3 and 3.1 million tons. During the 1974-75 crop year, 2.8 million tons were shipped under the program. Total expenditures under the program have ranged from $17.9 million to $21.5 million during the last 11 crop years, with the expenditures being $21.0 million in 1974-75. The average subsidy per ton of feed grain moved has ranged from $8.13 to $6.96 during the last 11 crop years; during the 1974-75 crop year, it was $7.40 per ton. Historically, Quebec has been the major benefactor of the program in terms of tonnage shipped (about 50 percent) with Ontario, the Maritimes and British Columbia receiving 25 percent, 14 percent, and 11 percent respectively of the tonnage shipped.

The subsidy rates for various regions are established annually by

The Canadian Livestock Feed Board on the basis of minimum transportation costs for grain from Thunder Bay for regions east of Thunder Bay and from Western Prairie points for British Columbia regions. As a rule of thumb, these rates have been set at a level that reduces net freight costs to feed grain users from Thunder Bay or Western Prairie points to between $4.00 and $5.00 per ton for all regions. The importance of this subsidy can be illustrated with several examples. On feed grains moving from Saskatoon to the Toronto area, the average subsidy is 26.5 percent of the total freight costs; to the Montreal area, it is 46 percent; and from Edmonton to the Moncton area, it is 69 percent.

The general impact of a transport subsidy, such as the Feed Freight Assistance Program, can be postulated even without the aid of empirical evidence. Since the subsidy applies only to feed grains, and not to livestock or livestock products, it encourages the shipment of feed grains rather than livestock or livestock products from the Prairies to Eastern Canada and British Columbia. As a result, livestock production (and particularly feed lot operations) shift away from the prairies and closer to centres of consumption such as Toronto, Montreal, and Vancouver.

Groups affected by this program can be categorized into those favoring the continuation of the program (the "gainers") and those favoring its termination (the "losers"). The principal "gainers" include prairie feed grain producers, and Eastern and British Columbia livestock producers. The principal "losers" include prairie livestock

producers, prairie livestock processors, and Eastern and British Columbia feed grain producers.

Prairie feed grain producers, as a group, are in favor of continuing the Feed Freight Assistance Program because it provides them with an advantage in serving one of their markets for feed grains. However, this is a declining market as Eastern grain production and United States corn imports increase in importance. Understandably, livestock producers in Eastern Canada and British Columbia favor a program whose objective is to equalize feed grain prices in Canada, thus giving them an advantage in supplying meat to the larger domestic consuming centres. However, as mentioned above, the expansion of feed grain production in Ontario, coupled with the availability of United States corn, has made the continuation of the program less crucial to the economic health of the livestock industry in Central Canada.

Prairie livestock producers have argued that subsidized feed grain prices in Eastern Canada and British Columbia have reduced their ability to compete in the large Eastern and British Columbia consuming centres. Also, they contend that there has been a gradual shift of livestock production away from the Prairies which have the natural locational advantage. These effects have been further compounded by the application of domestic statutory grain rates on movements of feed grains from prairie points to Thunder Bay. The distortive effect in favor of Eastern livestock producers was

estimated by the Food Prices Review Board to be $2.13 per hundredweight for hogs and $1.46 per hundredweight for feeder cattle. The smaller local prairie livestock processors have complained that the program has brought about a decrease in livestock population on the prairies, and consequently fewer livestock for processing on the prairies. Eastern and British Columbia feed grain producers have objected to the dampening effects of freight subsidized feed grains on local feed grain prices. As an example, a $15 ton freight subsidy on grain to Prince Edward Island reduces the price a Prince Edward Island farmer can get for his barley by 36 cents a bushel.

The question of what the actual impact of the Feed Freight Assistance Program has been on the Canadian economy generally, and the agricultural sector specifically, has been the subject of many debates and studies. The general consensus of most of these studies has been that the program should be terminated. Until fairly recently, such advice appeared to be unheeded by the Federal Government.

In August, 1973, Federal ministers, in outlining a new domestic feed grains policy for Canada, made reference to some possible modifications in the Feed Freight Assistance Program. These modifications included:

1) small intial reductions in Feed Freight Assistance in Ontario;

2) more general reductions to Montreal, accompanied by grain development programs for the East and British Columbia; and

3) a balancing of freight rates or assistance between grain and meat to ensure the development of agriculture according to natural advantages.

Nothing much happened until May 31, 1976, when the Federal Government announced its modified domestic feed grains policy under which domestic feed grains would be priced competitively with United States corn. Part of the modification included changes in the Feed Freight Assistance rates. Freight rate subsidies of $6.00 per ton and less would be eliminated in Ontario and Western Quebec. In British Columbia, the subsidy would be reduced by $4.00 per ton, while in Eastern Quebec and the Maritimes, the subsidy rates would remain unchanged due to a heavier reliance by producers on outside supplies of feed grains. The funds formerly used to pay the subsidy will now be used to expand storage facilities for feed grains in Eastern Canada.

Although it is too soon to assess the specific effects of these changes in feed freight assistance, some conjectures are listed below:

1) The elimination of freight subsidies in Ontario and Western Quebec and reduction in British Columbia should have minimal effects because of readily available United States corn and decreasing dependence on prairie feed grains;

2) there should be no effect in Eastern Quebec and the Maritimes, although some poultry and egg production might be attracted away from Western Quebec and Ontario over time;

3) there could be some softening of local prairie feed grain prices because of slightly diminished market opportunities, with a resulting expansion in prairie livestock production;

4) there is unlikely to be any significant gain in natural locational advantage to prairie livestock producers and processors unless new markets are developed either within Canada, the United States, or overseas.

Freight Rate Comparisons

Table IX-6 compares the freight charges incurred in shipping a 1,050 pounds slaughter steer from three representative Western Canadian points to Toronto and Montreal, the freight charges incurred from shipping the equivalent meat yield (550 pounds) and the freight charges involved in shipping a 500 pound feeder steer with 4,120 pounds of barley. The examination does not include the costs of shipping animals from rural points to local stockyards or packing plants in Western Canada.

TABLE IX-6

Transportation Charges for Feeder Steers with Barley, Slaughter Steers, and Beef from Selected Western Points to Toronto and Montreal, 1976

	Feeder Steer with Barley				
	500 lbs. feeder steer	4,120 lbs. of barley	Total	1,050 lbs. Slaughter Steer	550 lbs. of Beef
TO TORONTO					
From: Calgary	$ 20.50	$ 42.70	$ 63.20	$ 43.00	$ 32.10
Moose Jaw	17.50	40.30	57.80	36.80	26.40
Winnipeg	13.80	37.80	51.60	29.00	20.50
TO MONTREAL					
From: Calgary	21.10	43.50	64.60	44.20	32.10
Moose Jaw	18.10	41.00	59.10	38.00	26.40
Winnipeg	14.40	38.50	52.90	30.20	20.50

Notes: 1) Slaughter steer transport charges calculated to nearest 10c from CFA Tariff 116-I, charges per railway installed double deck cars, assumed to load at 60,000 lbs. Tariff effective October 1, 1976.

2) Beef transport charges calculated to nearest 10c from CFA Tariff 103-U, 50,000 lb. carload rate for meats, fresh or frozen, effective September 1, 1976. The rates in this tariff are the same to Toronto and Montreal.

3) Barley transport charges calculated as Crow's Nest Rates to Thunder Bay and Canadian Livestock Feed Board charges to Woodstock, Ontario, in Toronto comparison and, less freight assistance to St. Felix, Quebec, in Montreal comparison

The rail freight charges incurred in shipping a slaughter steer from Western Canadian points to Toronto and Montreal are substantially in excess of the charges for shipping an equivalent amount of beef. In respect of Toronto, the extra charges involved in shipping the slaughter steer ranged from $8.50 on a Winnipeg origin to $10.90 on a Calgary origin. The extra charges are somewhat greater when the destination is Montreal.

These savings on shipping meat rather than a live animal would, of course, be partly lost if some of the animal by-products have to be sent to eastern markets. These by-products consist of hides, fancy meats, meal and dry blood, and edible and inedible tallow. By-products amount to some 185 pounds per animal slaughtered but it is unlikely that all of these would be shipped to Eastern Canada. Even if they were all shipped to Eastern Canada, the cost of shipping the by-products would not be sufficient to offset the savings of shipping beef rather than slaughter steers.

In comparing freight charges on a slaughter steer with freight charges on a feeder steer and enough western grain to allow this steer to be fattened in the East, Woodstock is chosen for the location of the Ontario feedlot to serve the Toronto market and St. Felix is taken as the Quebec location to serve Montreal. The examination does not include either the costs of shipping animals from rural points to local stockyards or packing plants in Western Canada, or the transport costs incurred from the conversion of animals in Eastern Canadian feedlots into beef available in the markets of Toronto and Montreal.

It is clear from Table IX-6 that it is considerably cheaper to ship a slaughter steer from Western to Eastern Canada rather than a feeder steer plus the grain required to fatten it for slaughter. This is not surprising; very little western grain is used to produce beef cattle in Eastern Canada, where cattle fattening is normally based on corn. The present structure of freight charges includes the statutory rates on barley to Thunder Bay; although feed freight assistance has now been abolished to Woodstock, there is still an allowance of $2 per ton to St. Felix, Quebec. However, this structure of charges does not favour the shipment of feeder animals together with their grain from Western Canada to Eastern Canada. Of the three possibilities considered, freight charges are lowest on meat and by-products; next lowest on slaughter steers; and highest on feeder steers if shipped together with the grain required for fattening.

Table IX-7 makes similar comparisons in respect of freight charges for moving 160 pounds of dressed pork from Western Canada to Toronto, Montreal and Saint John, as against moving the barley required to produce an equivalent amount of meat. It takes much less grain to produce pork than to produce beef and a conversion rate of four pounds of feed for one pound of pork has been used.*

In respect of Saint John, it is cheaper to ship the equivalent amount of barley than the pork from Western Canadian points. Considering

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* This is lower than the 5:1 feed to meat conversion rate used in the CTC analysis, because the Commission found 3.7:1 or less is more consistent with actual industry practices.

TABLE IX-7

Transportation Charges for Barley and Pork from Western Points to Toronto, Montreal and Saint John, 1976

Origin	Toronto 600 lbs. Barley	Montreal 600 lbs. Barley	Toronto/ Montreal 160 lbs. Pork	Saint John 600 lbs. Barley	Saint John 160 lbs. Pork
	dollars				
Calgary	6.22	6.33	9.33	5.19	10.74
Moose Jaw	5.86	5.97	7.68	4.83	9.26
Winnipeg	5.50	5.61	5.97	4.47	7.74

Source: See Table IX-6

Toronto and Montreal as destinations, it is cheaper to ship barley rather than pork from all three origins. There is a saving in transport charges producing hogs in Eastern Canada using western feed grains, as against transporting pork from the West. This results from the low statutory rates on feed grains to Thunder Bay and feed freight assistance, where it is still applicable, on the movement from Thunder Bay to eastern points.

The Commission recommends that freight rates on livestock and meat be set at levels which do not discriminate against the natural locational advantage of prairie livestock producers and processors.

The Malting Industry

Western Canada has distinct natural advantages as the location for malting plants. These plants require large quantities of barley

to be economically viable. Following processing, the malt has approximately three-quarters the weight of the barley input. The international price for malt is generally such that malting companies can pay more for malting barley than is paid for feed barley. It is therefore in Canada's interests that the malting industry thrive. It generates employment, uses renewable resources, permits increased farmer incomes.

Currently this industry in Western Canada is plagued with institutional constraints which mitigate against development in the natural area.

Malting plants have not generally been licensed as primary elevators. They are therefore unable to take delivery from the producer but purchase from country elevators. An additional handle is therefore entailed which at current tariffs amounts to some 12 cents per bushel, a part of which could be saved and accrue to the producer if different purchase arrangements with grain companies were developed. The Commission has been told that malt plants in the prairies face the threat of not being able to obtain malting barley from the primary elevator system if they purchase directly from the producers. This is despite the fact that such grain held in primary elevators is the property of the Canadian Wheat Board and not the elevator company. Also, because the plants are not generally licensed as primary elevators, most of the barley is delivered by rail, and a further 18 cents per hundredweight "stop-off" charge is levied.

Plants in other locations, next to export ports or in Eastern Canada, adjacent to such users as breweries, enjoy advantages in that they do not pay this stop-off charge.

The Commission recommends:

1) That the malting industry be permitted to enjoy the natural geographic advantage of locating in Prairie Canada.

2) That the railway stop-off charge for storage and processing of grains be eliminated.

3) That malting plants located on the prairies be licensed as process elevators and be free to take delivery of malting barley direct from producers as well as from primary elevators.

4) That freight rates on malting barley continue on the statutory basis, and apply to both malting barley and barley malt.

CHAPTER 10

GRAIN TRANSPORTATION COSTS

RAILWAY REHABILITATION, RATIONALIZATION AND THE COST OF MOVING GRAIN

This chapter presents the Commission findings with regard to the magnitude of funds required to rehabilitate and upgrade the rail system in Western Canada. Combining this information with data which is available regarding rail maintenance and the cost of train operation provides some insight into the future cost of grain movement by rail and illustrates the savings resulting from rationalization of the network.

The Commission acknowledges that the negative impact of rationalization will weigh more heavily on certain individuals than it will on others and that the presentation of average savings calculated on the basis of the complete rail network may seem abstract when viewed through the eyes of those who bear the greatest burden, due to line abandonment. Other chapters of this report have outlined the Commission observations with regard to the effects of rail line abandonment on all parties. Each subdivision recommendation was based on consideration of every aspect of these effects and the drawbacks to removal of service in an area were fully recognized.

The Commission was also aware of the need to view the economics of rationalization in the total sense with the inclusion of such offsetting factors as roads and trucking costs which are discussed elsewhere in this report.

TRACK IMPROVEMENTS

Present System

The prairie rail network is composed of lines representing a wide variety of conditions ranging from main line sections of track capable of high traffic volumes at maximum speeds and loads to certain impassable sections of branch line which might be classed as abandoned from the standpoint of maintenance for traffic movement. Most of the rail branch lines and secondary routes, which have been retained over the years, serve in the collection and movement of grain and could be categorized somewhere between these extremes with respect to present condition. Basic load carrying capacity of these lines varies with the weight of steel in place as follows:

TABLE X-1

WEIGHT OF STEEL AND LOAD CAPACITY

Weight of track steel in lbs. per yard of length (single rail)	Normal designated load capacity (Maximum loaded car weight in lbs.)	Grain carrying capacity (Net weight in tons)
56 to 80	177,000	60 Ton Box Car
80 to 100	220,000	90 Ton Aluminum Hopper Car
100 --	263,000	100 Ton Steel Hopper Car

The following table outlines the capacity of lines of the rail system in Western Canada:

TABLE X-2

RAIL LINE Capacity

Capacity in lbs.	CN LINES		CP LINES		NAR LINES		TOTALS
	Cat.A	Cat.B	Cat.A	Cat.B	Cat.A	Cat.B	
	..... Miles of Rail Line - Each Company						
177,000	352.4	3,018.5	--	132.6	172.4	58.1	3,734.0
192.000	--	--	--	--	113.1	26.5	139.6
220,000	1,265.6	854.5	2,166.2	1,741.5	--	--	6,027.8
263,000	3,891.5	--	3,691.0*	470.1	550.5	--	8,603.1
							18,504.5

* Includes 107.3 miles 251,000 lb. capacity

Specification of rail line load carrying capacity is also dependent on certain factors in addition to weight of steel installed. These other factors relate to roadbed condition or essentially foundation for the steel such as condition of cross ties, tie support or stability and the load capacity of structures such as bridges and trestles. Tie support is, in turn, a function of subgrade construction, drainage, ballast maintenance*, vegetation control and condition of the steel itself.

A large portion of the network is characterized by branch lines on which capital expenditures and maintenance work have been severely curtailed. This deferral of expenditure has resulted in a deterioration of railbed and structures. Operation of trains over many branch lines and sections of branch lines must consequently take place with reduced

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* Ballast maintenance involves replacement of gravel, crushed rock or cinders and the leveling and tamping of this porous material around the ties to provide good top grade drainage, adequate tie support and track alignment.

loads and/or speeds. In some cases, especially where drainage is a limiting factor, train operations are restricted to certain periods of the year when roadbeds are dry or have been stabilized by freezing.

Future operation of many branch lines will be dependent upon an immediate increase in the level of annual maintenance. Some lines have reached the point where continuation of train service beyond a period of two to five more years could only be considered practical by the injection of capital in the form of a major program to replace defective ties, reballast and repair subgrade and structures.

Cost Estimates Submitted and Determination of Improvement Funds Required

Railway companies have provided detailed descriptions of the physical condition of all subdivisions which make up the approximately 6,300 miles of Category "B" rail line. In addition, each company presented estimates of capital required to perform major repair programs (rehabilitation) or alternately to rebuild (upgrade) lines to provide track and roadbed capable of carrying large hopper cars and heavy locomotives. These estimates of capital required for major repair and rebuilding included the subdivisions in the western rail system which comprise the Category "A" lines or basic network as well as Category "B" lines.

a) Variability of Estimates presented to the Commission:

Estimates of capital required to rehabilitate lines as presented by the railway companies to the Commission varied from less than ten thousand dollars to over 100 thousand dollars per mile.

This Commission must be cognizant of the complete prairie rail network; however, a major emphasis of the inquiry process and

analysis has centred around the rail system as it relates to grain transportation. The Commission on the Costs of Transporting Grain by Rail identified specific lines as "grain dependent".* The lines so designated account for 5,250 miles out of the 6,300 miles of Category "B" rail line in addition to 1,825 miles of the basic network and approximately 50 miles of Category "C" as follows:

TABLE X-3

GRAIN DEPENDENT LINES

Railway Company	Category "A"	Category "B"	Category "C"	Total
	..... Miles Approximately			
CN	125	3,230 (3,870)	--	3,355
CP	1,700	2,020 (2,340)*	50	3,770
TOTAL	1,825	5,250 (6,300)**	50	7,125

* Numbers in brackets are total mileages of rail including non-grain dependent lines.

** Includes 90 miles of NAR

The following table illustrates the average expenditure required per mile of track in the grain dependent and non-grain dependent categories as presented by the railway companies.

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* See Commission on the Costs of Transporting Grain by Rail Report, Volume I, pp. 106.

TABLE X-4

RAILWAY COMPANY REHABILITATION ESTIMATES

Railway Company	Grain Dependent Lines		Non-Grain Dependent Lines	
	Cat. A	Cat. B	Cat. A	Cat. B
	..... $/Mile			
CN	71,000	75,000	61,000	63,000
CP	38,000	23,000	36,000	20,000

Rehabilitation and upgrading costs for the grain dependent lines was a topic of much discussion in the costing hearings, and figures presented to the Commission on the Costs of Transporting Grain by Rail were in some cases at variance with information presented to this Commission. Examination and analysis of various estimates presented by railway companies for the rehabilitation or upgrading of the grain dependent lines thus provides some background for more accurate determination of funds which will be required for improvements in any future network configurtation selected.

b) Relationship of Rehabilitation Estimates to Actual Railway Line Condition and Comparison with Estimates presented to the Commission on the Costs of Transporting Grain by Rail

In submissions to the Commission on the Costs of Transporting Grain by Rail, Canadian National presented various estimates for the rehabilitation of grain dependent rail lines which finally settled at an average figure of about $48,500 per mile. This figure was approximately $30 thousand per mile lower than estimates

previously presented to this Commission for the same category of lines due to a change in year of costing and reduction in specification of ballast, tie plates and bridge repairs.

The CP Rail rehabilitation estimates presented to the Commission on the Cost of Transporting Grain by Rail were generally consistent with CP estimates presented to this Commission and averaged about $20 thousand per mile less than the final Canadian National figure in the case of the grain dependent lines.

During 1976, the Railway Transport Committee of the Canadian Transport Commission completed a program which had been initiated in 1975 to provide a physical inventory of all railway branch line assets for use in administering branch line subsidy claims. The results of this survey were made available to this Commission in the form of Branch Line Inspection Sheets. The following table summarizes the results of a compilation of data which was extracted from the inspection sheets.

TABLE X-5
BRANCH LINE INSPECTION SHEETS SUMMARY

		Approximate Mileage	% Ties Resuable	% Ties Plated
All Category "B" Lines	CN	3,870	52	47
	CP	2,340	32	94
All Category "A" Grain Dependent Lines	CN	125	61	46
	CP	1,700	34	98

Review of the above compilation would suggest that the average physical condition of Canadian National rail lines is better than that of CP Rail using percentage of reusable ties as an indicator. There was considerable discussion to the contrary recorded in the Commission on the Costs of Transporting Grain by Rail hearings.*

It is recognized that the branch lines of the CP Rail system are more fully tie plated and that they are equipped with heavier weight of steel than the Canadian National branch lines in general; however, this does not account for the great difference in the cost estimates for rehabilitating lines to normal capacity or restoring them to similar physical condition.

The rehabilitation estimates presented by Canadian National were based on the establishment of a predetermined standard per mile with allowances for specific renewal or rebuilding as required for structures on a particular line. Materials required for each subdivision were estimated by using the Canadian Transport Commission Branch Line Inventory Program Inspection Sheets as a reference. For example, the quantity of new ties required in rehabilitation (approximately one-third of total) was calculated by assuming new

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* In the Commission on the Costs of Transporting Grain by Rail hearings, transcript page 2716, CP stated that their rehabilitation estimates represented approximately ten years of maintenance deferral - Canadian National suggested that maintenance deferral for their lines likely started back in the early 1950's and that CP's lines received major injections of new ties and ballast at the time of relaying heavier steel in years following the second world war. -- Also note, on page 2717 of the same Commission hearing transcript, a quote by Mr. Wooden of Canadian National:

> "I am just saying that we have, for example, a higher percentage of the ties in CN line not useable or salvageable than in the CP lines."

tie replacments would be equal to the difference between total ties in the line and a figure equal to reusable ties, according to the inventory, plus 15 percent.

Estimates presented by CP Rail were based to a greater extent on consideration of the standard required and justified in order to maintain service as related to volume of traffic expected on a particular line.

c) Selection of Average Cost per Mile Figures and Application to a Defined Network:

Rehabilitation and upgrading costs have been assembled from the following sources in addition to submissions of the railway companies:

-- Deleuw Cather Consulting Engineers - from private discussions and content of Micro-rationalization Studies commissioned by the Ministry of Transport to assist the Commission;

-- Various studies and articles concerning branch lines in Iowa;

-- Loram International testimony before the Commission on Cost of Transporting Grain by Rail;

-- Canadian Transport Commission estimates prepared by Railway Transport Committee for reference in Canadian Transport Commission abandonment hearings.

These costs have been compared with figures presented by the railway companies and railway specifications such as FRA track standards (United States) have been reviewed. Table X-6 displays the costs selected as averages for application to a system configuration based on analysis of this data. This Commission views the

TABLE X-6

REHABILITATION OR UPGRADING EXPENDITURE*

Place of Line in a Future Network	Present line Description: Light Steel (less than 80#/yd.)	Steel 80 - 85#	Steel 100#
	$/Mile		
To be phased out over the next five years	Nil	Nil	Nil
To remain in system beyond five years and to be reviewed	15,000 (retain light steel)	15,000 (retain 80-85# steel)	15,000
To remain in system indefinitely where traffic volume is low	100,000** (replace light steel with 85# steel minimum)	25,000 (retain 80-85# steel)	25,000
To remain in system indefinitely with higher traffic volumes or where line is a link in the network***	140,000 (replace light steel with 100# steel)	140,000 (replace 80-85# steel with 100# steel)	25,000

* These costs represent 1974 conditions.

** Where rail is replaced, the salvage value has been deducted from the upgrading cost shown here - above figures then represent expenditures not total line investment

*** In the case of a new linkage, the investment would be $220 thousand per mile.

approach of relating expenditure, albeit somewhat subjectively, to traffic volume and future of the line as most practical. These factors resulted in a decision to apply similar average estimates to similar categories of branch line rehabilitation without differentiation between Canadian National and CP Rail.

"Upgrading" rail line implies a reconstruction of the physical plant starting at the subgrade to provide unrestricted operation of locomotives and equipment over the lines or sections of the lines to be retained.

Rehabilitation implies the restoration of the rail line to its original condition or design specification. This would be misleading in the sense that strict adherence to the original basic track criteria would not be compatible with current engineering practices, available materials and methods used today. For example, many temporary pile trestle bridges were installed on the principle that they would be replaced with fills and culverts after 12 to 15 years of service. Many of these temporary bridges still exist today and represent restrictions affecting speed and equipment at many locations. In addition, permanent bridges were constructed for a lighter class of locomotive power, again restricting heavier equipment now in general use by the railways. Rehabilitation could be defined as the restoration of the physical plant to a safe operating condition for a speed of 30 miles per hour.

Rehabilitation as applied to the deteriorated branch lines does contain certain basic requirements common to all branch lines:

TABLE X-7

CN BRANCH LINE REHABILITATION ESTIMATE

3,535 MILES SOLELY RELATED GRAIN LINES

1974 PRICES*

Summary Revised Estimates

Description	Quantity	Unit	Unit Cost	Total Cost $	Equivalent to Quantity/Mile	$/Mile
				(000's)		
Bankwidening, Drainage & Culvert Extenstions	3,535	Track Mile	4010	14,175		4,000
Ballast - In Place	370700 8600000	Cubic Yard	10.92 6.82	4,048 58,652	2,500 yd.	18,000
Track Ties	3571302	Each	13.18	47,070	1,000	13,000
Rail Anchors	5757486	Each	1.23	7,081	1,600	2,000
Tie Plates	2741860	Each	2.97	8,143	775	2,300
Bridge Rehabilitation		Sum		8,772		2,500 (Average)
Other-Fencing, Road Crossings, Vegetation Control, Miscellaneous		Sum		7,902		2,200 (Average)
Contingencies 10% On	155,853,000			15,584		4,400
TOTAL COST OF PROJECT	171,427,000			171,400		48,500

NOTE: Rehabilitation - Work required now to make the line suitable for continuing operation at normal speeds and present weight carrying capacity, continuing to use the rail now in place.

* CN estimate from Rebuttal Submission of CNR to the Commission on the Costs of Transporting Grain by Rail, 21 June 1976, Regina, Saskatchewan.

1) Drainage (spreader ditcher operation);

2) Culvert repairs and replacement;

3) Bridging repairs;

4) Bank widening and restoration;

5) Ballast renewals and surfacing;

6) Tie replacements to an acceptable level;

7) Rails and fastenings (no major program).

Table X-7 further illustrates the types of materials and unit costs involved in rehabilitation. This table contains the final numbers which Canadian National presented for grain dependent line rehabilitation costs to the Commission on Costs of Transporting Grain by Rail.

d) Estimation of Total Capital Required

Application of the appropriate figures from Table X-6 requires a knowledge of and some judgement with regard to level of service and likely future period of operation. It was determined that the estimates presented in the final submission by CP Rail for the upgrading of lines to 263 thousand pound capacity were lower than the figures which were presented at some local hearings as the costs required to rehabilitate lines to 220 thousand pound capacity for long term use. This indicated that CP Rail considered a lower standard specification of roadbed for certain lines to run at 263 thousand pounds than the original concept of a long term 220 thousand pound capacity line. It was also observed that expenditures

recommended by CP Rail in a network for the future as contained in the final submission to the Commission did not differ significantly from the rehabilitation estimates; variations were accounted for mainly by the need to upgrade certain sections of track which presently contain rail lighter than 80 pounds per yard. This approach to specification of a system for the future is consistentwith CP Rail current practice of operating heavy equipment (100 ton steel hopper cars) over some lines on which steel in place is actually below 100 pounds per yard.

In determination of total capital required, the Commission adopted the CP Rail approach to system specification by assuming that steel of less than 100 pounds per yard would serve adequately in many lines of a future network. It was further assumed that in some cases even the lightest specification of steel would remain in place and that for some period in the future the use of light cars over a portion of the network will find economic justification when compared with the alternative of exclusive use of heavy equipment and the attendent capital required for upgrading.

Throughout the inquirythere have been some suggestions that the complete prairie rail system should be retained and further that the complete system should be retained and upgraded to the highest standard; that is, that it should be capable of handling the 100 ton steel hopper cars at every existing point. This Commission, in coming forward with a scheme for rationalization which includes the abandonment of 2,165 miles and the retention

of other lines without a firm recommendation for upgrading, has obviously rejected the notion that the system should be "complete" regardless of cost. The following table illustrates the estimates of capital which would be required for alternatives which represent certain of these more radical solutions to provision of a network for the future as compared to the capital required to provide an "adequate network" for the future according to this Commission's recommendations.

TABLE X-8
ESTIMATES OF CAPITAL REQUIRED
(1974 Dollars in Millions)

	Upgrading the Complete Existing Network		Combination of Upgrading & Rehabilitating the Complete Existing Network		To Provide The Adequate Network-Configuration Recommended by the Commission
	According to Rly. Companies	According to Commission	According to Rly. Companies	According to Commission	According to the Commission Estimate
CN	1,204.7	758.4	360.4	524.1	297.5
CP	532.7	615.8	176.7	160.9	133.0
NAR	8.3	14.5	2.1	14.5	14.5
TOTAL	1,745.7	1,388.7	539.2	699.5	445.0

The estimate of $445.0 million required to provide the adequate network as outlined in this Commission's recommendations is detailed in the following table.

TABLE X-9

COMMISSION ESTIMATE OF REHABILITATION AND UPGRADING FUNDS REQUIRED TO PROVIDE AN ADEQUATE NETWORK FOR THE FUTURE

(1974 Dollars in Millions)

	Grain Dependent Lines		Non-Grain Dependent Lines		Total
	Cat.A	Cat.B	Cat.A	Cat.B	
CN	11.6	117.3 (21.4)	146.6	22.0 (2.6)	297.5 (24.0)
CP	52.3	25.8 (14.2)	48.7	6.2 (1.5)	133.0 (15.7)
NAR	--	--	3.7	10.8	14.5
TOTAL	63.9	143.1 (35.6)	199.0	39.0 (4.1)	445.0 (39.7)

NOTE: The numbers in brackets are estimates included for rehabilitation expenditures estimated for lines which would be transferred to the Prairie Rail Authority according to the Commission's recommendations.

The relatively higher total system cost for Canadian National of $297.5 million versus CP Rail $133 million in a suggested network is largely a result of the high proportion of light steel rail which presently comprises the Canadian National branch lines. Upgrading and new construction accounted for $260.3 million for Canadian National and only $21 million of the above commission estimate for CP Rail.

The above estimates were based on detailed assumptions regarding specifications used to determine the contribution of

each subdivision to the total figure. Only the total cost figures are submitted as a best estimate of future requirements. The total cost is likely more significant and meaningful as a reference than is the detailed specification which has been assigned to any individual line for purposes of deriving this total, and this Commission is not promoting and does not support the adoption of a preset plan for the future based on such assignment. The establishment of required specifications and the determination of priorities regarding rehabilitation or upgrading programs will depend on a number of factors related to the changes which take place over the future years. Volume of traffic, including possible non-grain development, and sizing of equipment are major factors which will enter into decisions as time unfolds and as branch lines come up for major repair or rebuilding.

THE EFFECTS OF SYSTEM RATIONALIZATION ON THE COST OF MOVING GRAIN

The preceeding section of this chapter has outlined the Commission findings with regard to capital required in order to rehabilitate and upgrade the rail network in Western Canada. This analysis has demonstrated the potential capital savings which might be realized through the abandonment of certain lines and through retention of other lines on the basis of "discretionary investment." Retention of the complete system "as is" with some judgement applied to the level of service required could reduce new capital injection required

by about 50 percent from nearly $1,400 million to approximately $700 million. Rationalization as recommended by the Commission would further reduce capital requirements by about $250 million to the final estimated total of $445 million. These estimates include funds required within the complete prairie rail network. Rail lines designated as grain dependent account for approximately $200 million of the total, however, the major portion of the above savings is a result of reductions in the allocation to those rail subdivisions which fall within this category. The following discussion provides some perspective on the effects of line abandonments on both capital and operational costs as related to grain movement.

The Commission on Costs of Transporting Grain By Rail report provides a breakdown of costs for 7,126.9 miles of grain dependent lines consisting of 3,771.8 miles of CP Rail and 3,355.14 miles of Canadian National. This breakdown addresses roadway costs whereas train operational costs were totalled for the system as a whole as assigned to grain movement.

Grain dependent roadway costs as compiled by the Commission on Costs of Transporting Grain by Rail were subclassed as volume related and line related. The line related costs are relevant for purposes of assessing potential savings due to rationalization -- these costs are essentially avoidable in that abandonment of a line would eliminate this category of accounts. Line related costs of $31.7 million for CP Rail and $20.9 million for Canadian National are equivalent to an average annual cost of $7,380 per mile of grain dependent rail line.

The $7,380 per mile annual cost figure consists of roadway maintenance, taxes, depreciation and capital funds costs but it does not include the cost of additional capital which would be required in order to rehabilitate or upgrade lines. The Commission on the Cost of Transporting Grain by Rail figures do, however, include sufficient costs to maintain lines on a continuing or ongoing basis and in this way the totals reflect higher levels of expenditures than in current practice.

Calculation of potential savings resulting from network reduction might then be considered in terms of three categories as follows:

1) Roadway maintenance - $7,380 per mile. This includes annual maintenance, taxes, depreciation and cost of funds presently invested.

2) Cost of new capital. This is the annual cost of funds which would be required to rehabilitate or upgrade the lines to a standard adequate for the future.

3) Train operation. This is the additional cost of train runs on lines. Only part of the total train operating costs are available for savings since there would be a transfer of costs to neighboring lines in the event of abandonment.

In order to demonstrate the effects of abandonment and to provide some guidance for future consideration of line viability, the Commission has assessed costs associated with three network configurations.

The cost of capital was a subject of major concern in the proceedings of the Commission on the Costs of Transporting Grain by Rail. This is a complex subject and the choice of an appropriate rate of return is dependent on a wide array of assumptions related to capital structure and capital markets. This presentation of potential savings

will include only the estimates of capital funds required. The second volume of the Commission on the Costs of Transporting Grain by Rail report will present further detail with regard to annual cost of capital required for various configurations of the rail network.

Train operational cost savings have been approximated by considering the reduction in service units as detailed in the Canadian National final submission to this Commission as estimated for abandonment of 2,532 miles of track. This reduction in service units as estimated by Canadian National was expressed as a percentage of total output units for Canadian National as detailed in Appendix E of the Commission on the Costs of Transporting Grain by Rail report. The reduction in train operational costs was then computed by applying the above percentage reduction in output units to the appropriate cost item in Appendix M of the same report. This resulted in a total of $7.9 million for an average reduction in train operational expenses equivalent to $3,120 per mile of abandoned track.

Configurations which have been selected for demonstration of potential savings which attend railway rationalization are outlined in the following table. The purpose of this table is to present only the order of magnitude of savings expected in various cost categories. The application of the Canadian National average cost per mile reduction in train operational savings and use of the aggregate average roadway maintenance figure as discussed above is considered appropriate for purposes of this presentation. More specific data will be used in order to provide more precise results in all these cost categories for various rail configurations to be included in the second volume of the Commission on the Costs of Transporting Grain by Rail report.

TABLE X-10

REDUCTION IN COSTS & CAPITAL REQUIREMENTS
RESULTING FROM RATIONALIZATION

Description of Network Configurations	Potential Annual Savings			Capital Funds Savings
	Mileage Reduction	Roadway Maintenance	Train Operation	
	..... $ Millions			
1. The present configuration Refer to Map #1	0	0	0	0
2. The configuration as of 1981. (This is following all of the abandonments recommended by the Commission as detailed in Chapter XI) Refer to Map #2	2,165.5	16.0	6.8	254.5
3. The network as recommended by the railway companies in final submissions to the Commission	3,699.2	27.3	11.5	246.9*

* Even with the greater mileage reduction in the railway configuration the capital requirements are more than the Commission's recommended system due to lower levels of expenditure required for 2,343 miles of Prairie Rail Authority Lines.

COMPARISON OF OFF-LINE ELEVATOR SERVICES TO RAIL SERVICE

The concept of off-line elevator operation was discussed in Chapter 5. The Commission recommendation that mechanisms be established to facilitate this type of operation is based on recognition of the potential for substantial savings in costs associated with the movement of grain by truck versus rail in some areas.

Abandonment of the Inwood subdivision would leave the communities of Fisher Branch and Broad Valley without rail service and the Commission has cited this area as a case where off-line elevator operation would be feasible. The following presentation of costs is a result of analysis of different options in forwarding grain from receiving elevators at Fisher Branch and Broad Valley. This analysis involves a number of assumptions with regard to the cost components in each option, however, such analysis demonstrates the order of magnitude of savings to be realized by off-line elevator operation versus retention of rail service expressed in terms of 1974 costs.

Rail Service

Various alternatives have been reviewed in considering least cost means of retaining rail service to Fisher Branch. Long term operation could be most economically achieved by the construction of a new 19 mile rail link from Arborg to Poplarfield. This results in a total annual rail and train cost of $500 thousand to $900 thousand or 50 cents to 90 cents per bushel of grain forwarded.

Off-Line Operation

This mode of operation would involve commercial trucking of grain from Fisher Branch and Broad Valley to be transloaded on-line at Arborg. Trucks would travel over a total of three miles of access roads near the two communities in addition to about 13 miles of highway #16 and 18 miles of highway #68.

A maximum of about eight truck loads per day would move all grain delivered during peak periods. It is estimated that this additional traffic would have a minimal effect on the roads involved, resulting only in a slight decrease in time interval between regular resurfacing operations at an annual cost of $350 per mile of road affected for a total of about $11 thousand or one cent per bushel.

It was determined by the Commission that the marginal cost of handling additional grain at Arborg would be about four cents per bushel. It is likely that an older elevator at Arborg might be dedicated exclusively to the transloading of grain and an analysis of operating and capital costs for this type of facility confirms the four cents per bushel figure for this second handling.

A commercial trucking cost for elevator to elevator haul of seven cents per bushel when combined with the additional road and handling costs results in a total cost of about 12 cents per bushel.

Potential Off-Line Elevators

In Chapter 5 of this report the Commission outlined characteristics of delivery points which should be considered for off-line operation.

The above example shows that this mode of operation would result in substantial savings in the forwarding of grain. The Commission views this result as demonstrative of sound economic potential inherent in the off-line elevator concept further reinforcing the recommendation that a number of points be seriously considered for this type of operation.

STATUTORY RATES

Regardless of what rate may be set for the transport of grain to export position that rate must be statutory, not variable. Anything else would be a violation of promises made to the producers of Western Canada. If the Government considers that the railways should have the amount suggested by the Commission on the Costs of Transporting Grain by Rail to transport grain, that amount, according to the findings of that Commission, will be in excess of the Crows Nest Rate. How the difference between the new rate and the Crows Nest Rate will be apportioned between the Government and the producer is, of course, a matter for Government decision. This Commission feels that the Government must continue to subsidize the transportation of export grain and that the full cost, as deemed by the Commission on the Costs of Transporting Grain by Rail, must not be imposed on the producer. The contribution Western grain makes to Canada's balance of payments position demands that a substantial part of any increase be borne by the federal Government in the National interest.

Support for the retention of the Crow Nest (Statutory) Rate was voiced by the Honourable Jack Davis, speaking for the Province of British Columbia, at our Vancouver hearing:

> "While we believe that the export of grain should pay its own way on the railways, we are not, at the same time, saying that the prairie wheat farmer should pay the difference. We are saying instead that the Federal Government should bridge the gap. It should pay the farmer the difference between the present level of rates and a realistic level of rates, the latter being equal to the true cost of moving grain to the Coast."

The Commission recommends that the difference between the Crows Nest Rate and the rate determined through costs found by the Commission on the Costs of Transporting Grain by Rail should be paid directly to the railways, and not to individual farmers. The very idea of sending out cheques to 160 thousand farmers is appalling.

CHAPTER II

AN EVALUATION FRAMEWORK

AN EVALUATION FRAMEWORK

In conducting a comprehensive evaluation of the transportation requirements of each area of the prairies, the Commission gave full consideration to the implications of any adjustments to the grain handling and transportation systems as they related to producers, communities, the primary elevator system and the rail network operations.

At the outset of its analysis the Commission divided the grain growing area of Western Canada into 17 regions, a breakdown devised to accommodate an appropriate evaluation process. Boundaries for the regional analysis were established following consideration of such factors as natural geographic boundaries, production patterns, the railway network, shipping blocks and the size of each area. Within these regions the Commission was also able to have area studies carried out to examine the impact of changes in the configuration of the rail and elevator system within an area. These alternative configurations involved construction of links between various parts of the existing rail system, the effect of the closure of lines, or parts of lines, on other parts of the system, and the road and highway requirements of these areas.

Rail lines considered by the Commission were analysed in a variety of ways. The information presented at local, regional and global hearings was an important input to this process. The concerns, views and aspirations of individuals, organizations

and communities, as expressed through the presentation of 1,296 briefs at 77 local, and 14 regional hearings, played a major role. The information provided through hearings and the statistical information available from a multitude of sources, was naturally voluminous. The Commission established a set of criteria for assessment of branch lines which:

i) Broadly reflected some of the dimensions of importance of the branch line to the grain handling and transportation activities in the area.

ii) The importance of communities in the area. Population is not the only indicator of the importance of a community. Account has been taken of services, both economic and social, provided by communities. The presence of schools, hospitals and recreation facilities are indicators of community significance.

The establishment of such criteria provided a valid basis for identifying those obvious candidates for retention or abandonment.

The criteria for assessment of Branch lines included such data as the number of permit book holders served by the line, the volume of grain receipts, the condition of, and future plans for primary elevators on the line, the costs associated with rehabilitating or upgrading the line, the importance of non-grain traffic, the importance of communities on the line and additional trucking distances to alternate lines. This latter criterion

also accounts for such factors as time, added energy consumption and impact on rural roads.

It was not desirable to reduce this total assessment to a purely mechanical selection process. Common sense and judgement had to remain of paramount importance in arriving at a final decision and recommendation for each line.

In recommending retention of lines the Commission placed these lines in one of two categories:

1) To be retained and placed in the basic network guaranteed to January 1st, 2000. Included in this category were:

   i) Lines which were essential to providing a direct through route for transportation of grain and other commodities.

   ii) Heavy volume lines on which traffic is expected to increase in the future.

   iii) Lines which, if abandoned, would create extremely severe hardships for the users of those lines, through extremely long distance truck hauls, etc.

2) To be retained and placed under the jurisdiction of the Prairie Rail Authority. Included in this category were:

   i) Lines on which traffic, at this time

sufficiently heavy enough to warrant retention for a period exceeding five years.

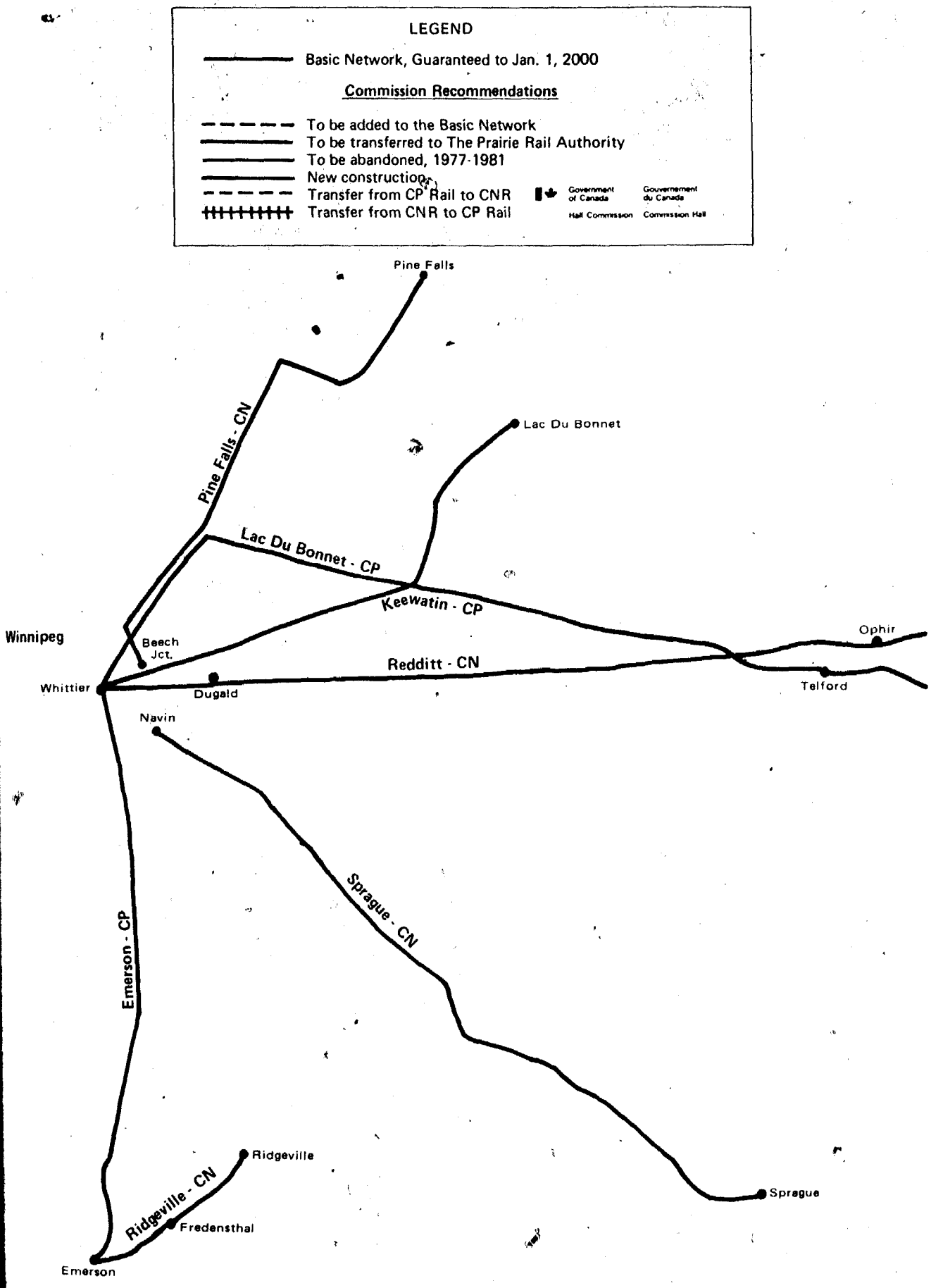
ii) Lines which will increase in importance and volume of traffic due to the abandonment of adjacent lines.

iii) Lines where it is sufficiently unclear that elevator companies will retain service to January 1st, 2000.

In recommending abandonment of lines the Commission has recognized the need to allow sufficient time for adjustments to take place. Producers need time to adjust to new hauls, elevator companies require time to increase elevator capacities, or improve handling capabilities on adjacent lines and municipalities to make any required road improvements. The Commission has recommended that some lines can close June 30th, 1977. These are lines on which there are no elevators remaining, and which generate no other rail traffic.

In all cases of abandonment, as set out in the regional recommendations, the Commission recommends that the right of way in each case vest in the Crown in the Right of the Respective Province. Upon abandonment the railway retains the Chattel property, rails, ties and track material, but not culverts where a drainage pattern has been established.

REGION 1


LEGEND
Basic Network, Guaranteed to Jan. 1, 2000
Commission Recommendations
To be added to the Basic Network
To be transferred to The Prairie Rail Authority
To be abandoned, 1977-1981
New construction
Transfer from CP Rail to CNR
Transfer from CNR to CP Rail
Government of Canada
Gouvernement du Canada
Hall Commission
Commission Hall
Pine Falls
Pine Falls - CN
Lac Du Bonnet
Lac Du Bonnet - CP
Keewatin - CP
Winnipeg
Beech Jct.
Whittier
Dugald
Redditt - CN
Ophir
Telford
Navin
Sprague - CN
Emerson - CP
Ridgeville
Ridgeville - CN
Fredensthal
Emerson
Sprague

REGION 1

Canadian National - Ridgeville Subdivision

- From Emerson to Ridgeville, Manitoba - 11.4 miles

This line was constructed by the Canadian Northern Railway between 1902 and 1906, and subsequently absorbed into the Canadian National Railway System.

The two N.M. Paterson and Sons elevators at Ridgeville are in useable condition. The company states that the low handle of 120 thousand bushels per year limits the economic life of this delivery point. They do not consider that Ridgeville will become a major delivery point.

The Manitoba Pool Elevator at Fredensthal is in good condition, and handles in excess of 200 thousand bushels per year. Handlings will increase when the Ridgeville elevators close and elevators at Fredensthal have the capacity to handle the additional volume.

Grain receipts on this line averaged 398 thousand bushels per year in the ten years ending 1974-75. Average receipts are 35 thousand bushels per mile of track.

The Commission recommends that;

1) the 4.5 miles of track between Fredensthal and Ridgeville be abandoned December 31, 1977, and;

2) the 6.9 miles of track between Emerson and Fredensthal be retained and placed under the jurisdiction of the Prairie Rail Authority.

TABLE XI.1

Commission Recommendations For Category "B" Branch Lines

REGION 1

SUBDIVISION	FROM	TO	MILEAGE	ADD TO BASIC NETWORK	TRANSFER TO PRAIRIE RAIL AUTHORITY	TO BE ABANDONED					
						1977		1978	1979	1980	1981
						June 30	Dec. 31				
CN Ridgeville	Ridgeville	Fredensthal	4.5				4.5				
CN Ridgeville	Fredensthal	Emerson	6.9		6.9						
TOTAL REGION 1			11.4		6.9		4.5				

REGION 2

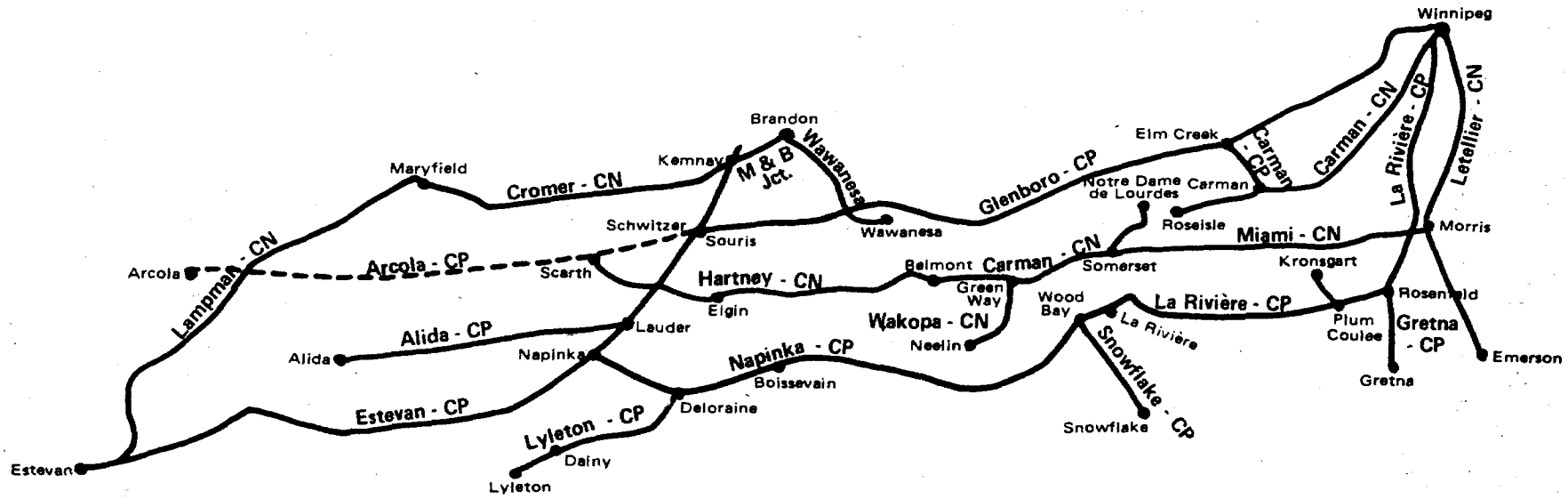
LEGEND

Basic Network, Guaranteed to Jan. 1, 2000

Commission Recommendations

- To be added to the Basic Network
- To be transferred to The Prairie Rail Authority
- To be abandoned, 1977-1981
- New construction
- Transfer from CP Rail to CNR
- Transfer from CNR to CP Rail

Government of Canada / Gouvernement du Canada
Hall Commission / Commission Hall



CP Rail - Arcola Subdivision

- From Schwitzer, Manitoba to Arcola, Saskatchewan-96.0 miles

This line was constructed between 1892 and 1901. It is constructed with 100 pound steel and has a gross carrying capacity of 263 thousand pounds.

Grain receipts on this subdivision have averaged 3.7 million bushels per year, in the 10 years ending 1974-75. Averaged receipts equal 38 thousand bushels per mile of track.

This subdivision forms a part of a continuing secondary line through the southern prairies, providing a bridge between Southern Alberta, Southern Saskatchewan and the Lakehead.

The Commission recommends that the Arcola Subdivision be retained and placed in the basic network guaranteed until January 1, 2000.

CP Rail - Alida Subdivision

- From Lauder, Manitoba to Alida, Saskatchewan - 54.5 miles

This line was built by the Canadian Pacific Railway between 1902 and 1912. The rail is primarily 85 pound steel, rolled in the period 1896 and 1911 and installed partly worn between 1948 and 1953.

Grain receipts on this line averaged 1.6 million bushels per year, in the 10 year period ending 1974-75. Average receipts equal 29 thousand bushels per mile of track.

Manitoba Pool Elevators have made extensive renovations to elevators on adjacent lines at Sinclair and Pierson, and are constructing a new elevator at Reston. Both United Grain Growers and the Saskatchewan Wheat Pool forecast a limited life for their delivery points on this line.

The bridge over the Souris River at Mile 4.6 was washed out in April 1976. CP Rail refused to replace it. There were a number of smaller structures washed out and a causeway between mileages 4 and 6 that is badly eroded. No traffic has moved over this line since March 1976.

The Commission recommends that the Alida Subdivision be abandoned as at June 30, 1977, and that CP Rail be ordered to empty the elevators on this line.

CP Rail - Lyleton Subdivision

- From Deloraine to Lyleton, Manitoba - 37.5 miles

This line was constructed by Canadian Pacific Railway between 1900 and 1903. It has 85 pound steel and a gross carrying capacity of 220 thousand pounds.

There are four delivery points on the line; Lyleton, Dalny, Waskada, and Goodlands. Grain receipts on the line averaged 1.7 million bushels per year, in the 10 year period ending 1974-75. Average receipts equal 44 thousand bushels per mile of track. The area served by the Lyleton Subdivision is bordered on the south by the United States boundary. Alternate delivery points

are restricted to those on the Napinka Subdivision to the north. If the total subdivision was abandoned many producers in the Waskada area would have hauling distances in excess of 20 miles.

Both Paterson and Manitoba Pool have elevators at Lyleton. The Paterson elevator is in very poor condition, and that company have stated that they do not plan to renovate or rebuild. The Lyleton Pool Elevator Association is an independent association. Manitoba Pool Elevators state they have no plans to renovate this elevator. They are in the process of upgrading their plant at Pierson to service a larger area and have recommended that portion of the line west of Waskada be retained until 1980.

In April 1976 the bridge over the Souris River at mile 25.4 of the Subdivision was rendered inoperable. CP Rail have refused to repair this bridge. No trains have been west of Dalny since early 1976.

The Commission recommends that:

1) the 15.3 miles of line between Dalny and Lyleton be abandoned at June 30, 1977; and
2) that the 22.2 miles of the Subdivision between Deloraine and Dalny be retained and placed under the jurisdiction of the Prairie Rail Authority.
3) The Commission also recommends that CP Rail be ordered to empty the elevators at Lyleton.

Canadian National - Hartney Subdivision

- From Belmont to Scarth, Manitoba - 82.9 miles

The first few miles of this subdivision were built by the Northern Pacific and Manitoba Railroad in 1898, as part of the Morris to Brandon line. The remainder was built by Canadian Northern in 1905. The line formerly continued on to Virden. The Scarth to Virden portion of the line was abandoned in 1975. No traffic originates or terminates on the Hartney to Scarth portion of this subdivision. This part of the subdivision serves as a "bridge" to gain access to the traffic generating portion of the line east of Hartney. The line is constructed with 56 to 60 pound steel and has a gross carrying capacity of 177 thousand pounds.

Grain receipts on this line averaged 2.8 million bushels per year in the 10 year period ending 1974-75. This is equivalent to 34 thousand bushels per mile of track. Between Hartney and Belmont this subdivision serves the delivery points of Elgin, Fairfax, Minto, Margaret, Dunrea and Ninette. Annual receipts on this portion of the line averaged 2.6 million bushels in the 10 year period ending 1974-75; equal to 63 thousand bushels per mile of track. Hartney is currently served by both the CP Rail Estevan Subdivision and the Canadian National Hartney Subdivision.

The Canadian National Railway have stated that this subdivision could be served efficiently from the Carman Subdivision as

far west as Elgin.

The Commission recommends that:

1) the portion of this subdivision from Elgin to Scarth be abandoned June 30, 1977, and,

2) that portion between Belmont and Elgin be retained and placed under the jurisdiction of the Prairie Rail Authority.

CP Rail - Snowflake Subdivision

- From Wood Bay to Snowflake, Manitoba - 16.6 miles

This line was constructed by Canadian Pacific Railway from Wood Bay to Mowbray between 1899 and 1903, and extended to Windygates in 1908-09. A second extension ran west from Snowflake to Fallison. These sections from Snowflake were abandoned in 1962. The line is constructed of 85 pound steel with a gross carrying capacity of 220 thousand pounds. There are two delivery points on the line, Purves and Snowflake.

Grain receipts in the 10 years ending 1974-75 averaged 596 thousand bushels annually, equal to 36 thousand bushels per mile of track.

The area served by this line is bordered on the south by the United States boundary. Alternate delivery points are on the La Riviere and Napinka Subdivision to the north. Abandonment of this line would result in an additional haul of 14 miles for many

producers and for a very few a total haul of 20 to 25 miles.

The Commission recommends that the Snowflake Subdivision be abandoned in 1981.

Canadian National - Wakopa Subdivision

- From Greenway to Neelin - 17.8 miles

This line was constructed in 1903-04 by the Western Extension Railway and originally ran from Greenway to Wakopa and Deloraine. The Neelin to Deloraine portion was abandoned in 1960.

The line is constructed with 56 pound steel and has a gross carrying capacity of 177 thousand pounds. There are two delivery points on the line at Glenora and Neelin. There are no plans to renovate or improve these plants.

Grain receipts on this line have averaged 509 thousand bushels annually in the 10 year period ending 1974-75. Average receipts are equal to 29 thousand bushels per mile of track.

Producers in the Neelin area indicated that their alternate choice of delivery point was Killarney, a distance of 16 miles, rather than Cartwright, a distance of 11 miles. Other alternate points are Baldur and Belmont to the north. With abandonment producer trucking distance would not exceed 17 miles.

The Commission recommends that the Wakopa Subdivision be abandoned in 1978.

Canadian National - Carman Subdivision

- From Carman Junction to Roseisle, Manitoba - 59.0 miles.

- From Notre Dame Junction to Belmont, Manitoba - 48.5 miles

This subdivision was built by a variety of Companies between 1901 and 1905. It is constructed with 55 to 60 pound steel and has a gross carrying capacity of 177 thousand pounds.

The Graysville to Roseisle section, 8.5 miles, has had no traffic since 1974. The line from Carman Junction to Carman serves one of the more productive areas of Manitoba. All four delivery points, Sanford, Brunkild, Sperling and Homewood, have good elevator facilities. This section of the line has an average handle of 2.4 million bushels, or equal to 56 thousand bushels per mile of track. Manitoba Pool state their elevator at Graysville is in poor condition, and has a limited life. The portion of this line between Somerset and Belmont has average annual receipts of 2.3 million bushels, in the 10 years ending 1974-75, equal to 58 thousand bushels per mile of track.

The Commission recommends:

1) the portion of this subdivision between Carman Junction and Carman, and the portion between Belmont and Somerset be retained and placed under the jurisdiction of the Prairie Rail Authority.
2) the portion between Somerset and Notre Dame Junction be abandoned in 1978.
3) that portion of the subdivision between Graysville and Carman be abandoned in 1980, and;

4) that portion between Graysville and Roseisle be abandoned at June 30th, 1977.

Canadian National - Notre Dame Subdivision

- From Notre Dame Junction to Notre Dame des Lourdes-2.6 miles

This line was constructed by the Canadian Northern in 1906-1907 with 60 pound steel. It has a gross carrying capacity of 177 thousand pounds.

Grain receipts on this line averaged 330 thousand bushels per year in the 10 year period ending 1974-75. The 8.6 miles of the Canadian National Subdivision between Somerset and Notre Dame Junction serve this subdivision exclusively. On the basis of 11.2 miles this line originates 29 thousand bushels per mile of track. Notre Dame is the only delivery point on this line. Grain constitutes 90 percent of the lines traffic. Fertilizer, coal and agricultural implements made up 10 carloads of inbound traffic. Manitoba Pool do not plan to repair it's plant or to replace the elevator lost in a 1974 fire. Alternate delivery points are available at Rathwell, 8 miles to the north, over a paved highway, or Altamont and Somerset 11 and 12 miles south. Gravel deposits in the area are not of satisfactory quality for rail ballast, and it is doubtful that limestone in the vicinity of Babcock will require rail transport in the future.

The Commission recommends that the Notre Dame Subdivision be abandoned in 1978.

CP Rail - Carman Subdivision

- From Kronsgart to Plum Coulee, Manitoba - 7.9 miles

This line was constructed by both the Manitoba Southwest Colonization Railway and Midland Railway Company of Manitoba between 1890 and 1907. It originally extended from Elm Creek to Plum Coulee. Kronsgart was the only delivery point served by the Kronsgart - Plum Coulee section. The elevator there closed December 15th, 1976.

The Commission recommends that this portion of the CP Rail Carman Subdivision be abandoned June 30, 1977.

Canadian National - Miami Subdivision

- From Morris to Somerset, Manitoba - 62.1 miles

This line was built by the Northern Pacific and Manitoba Railway in 1889-90. It was subsequently absorbed in the Canadian National Railway system.

The line is constructed of 56 to 60 pound steel and has a gross carrying capacity of 177 thousand pounds.

Grain receipts on this line averaged 2.7 million bushels per year in the 10 year period ending 1974-75. Receipts per mile of track equal 44 thousand bushels. The line serves ten delivery points, Smithspur, Lowe Farm, Kane, Myrtle, Roland, Jordan, Miami, Rosebank, Deerwood and Altamont.

The Commission recommends that this subdivision be retained and placed under the jurisdiction of the Prairie Rail Authority.

Canadian National - Wawanesa Subdivision

- From M and B Junction to Wawanesa - 22.7 miles.

This line was originally built in 1898 by the Northern Pacific and Manitoba Railway Company and ran from Morris to Brandon.

The line is constructed with 56 pound steel and has a gross carrying capacity of 177 thousand pounds.

Grain receipts on the line averaged 872 thousand bushels per year in the 10 year period ending 1974-75, equal to 38 thousand bushels per mile of track.

Elevators at the two delivery points on the line are in good to excellent condition. A new elevator was built at Rounthwaite in 1974, and the Wawanesa elevator was renovated in 1975.

The average hauling distance for producers to Rounthwaite is 5.2 miles, and Wawanesa 6.0 miles. When the line is abandoned producers at Rounthwaite will have an additional haul of 9 miles, and at Wawanesa an extra 8 miles, a few producers will be forced to haul up to 20 miles.

The Commission considered a number of alternative rail operations for the line. However, it found the additional hauling distances for producers, following abandonment, were not unreasonable. Manitoba Pool Elevators stated that if the line is abandoned it could move the Rounthwaite elevator to the CP Rail line near Methven, thereby reducing the additional haul for producers at both Wawanesa and Rounthwaite.

The Commission recommends that the Canadian National Wawanesa Subdivision be abandoned in 1981.

TABLE XI.2

Commission Recommendations For Category "B" Branch Lines

Region 2

SUBDIVISION	FROM	TO	MILEAGE	ADD TO BASIC NETWORK	TRANSFER TO PRAIRIE RAIL AUTHORITY	TO BE ABANDONED				
						1977		1978	1979	1980	1981
						June 30	Dec.31				
CP Alida	Lauder	Alida	54.5			54.5					
CP Lyleton	Lyleton	Dalny	15.3			15.3					
	Dalny	Deloraine	22.2		22.2						
CP Snowflake	Snowflake	Woodbay	16.6								16.6
CN Hartney	Elgin	Scarth	40.9			40.9					
	Belmont	Elgin	42.0		42.0						
CN Carman	Somerset	Notre Dame Jct.	8.6					8.6			
	Roseisle	Graysville	8.5			8.5					
	Graysville	Carman	6.9							6.9	
	Belmont	Somerset	39.9		39.9						
	Carman Jct.	Carman	43.6		43.6						
CN Notre Dame	Notre Dame Jct.	Notre Dame de Lourdes	2.6					2.6			
CP Carman	Kronsgart	Plum Coulee	7.9			7.9					
CN Wawanesa	Wawanesa	M & B Jct.	22.7								22.7
CN Miami	Morris	Somerset	62.1		62.1						
CP Arcola	Schwitzer	Arcola	96.0	96.0							
CN Kakopa	Greenway	Neelin	17.8					17.8			
TOTAL REGION 2			508.1	96.0	209.8	127.1		29.0		6.9	39.3

REGION 3

LEGEND

Basic Network, Guaranteed to Jan. 1, 2000

Commission Recommendations

- To be added to the Basic Network
- To be transferred to The Prairie Rail Authority
- To be abandoned, 1977-1981
- New construction
- Transfer from CP Rail to CNR
- Transfer from CNR to CP Rail

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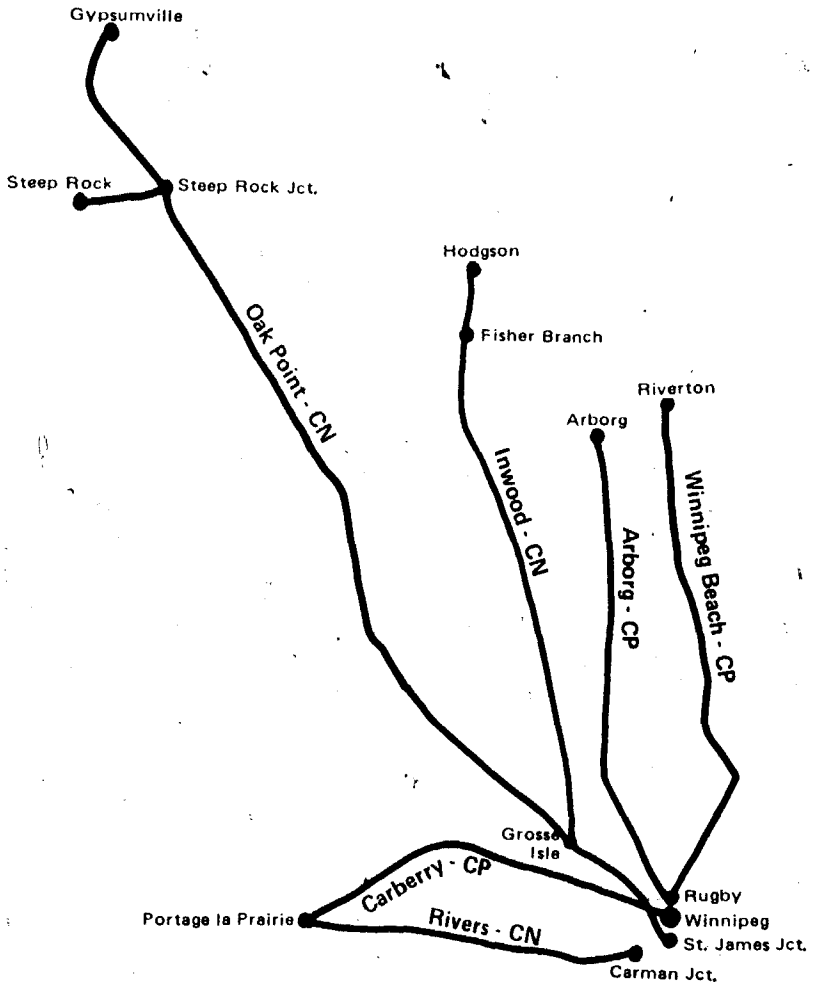

REGION 3

The Interlake

The Interlake region is a unique geographic area. Due to the special nature of this region with its mix of arable and non-arable land, its four railway subdivisions and its development potential, this area was subjected to two studies to thoroughly examine all methods and railway configurations for serving the region.

These studies were:

1) a joint Canadian National Railway - C.P. Rail study,

2) a P.S. Ross & Associates study.

These studies were carefully reviewed by the Commission in arriving at its recommendations.

Canadian National - Inwood Subdivision

- From Grosse Isle to Hodgson, Manitoba - 80.9 miles.

The line was constructed by Canadian Northern Railway between 1903 and 1914. It is laid with 56 to 60 pound rail and has gross carrying capacity of 177 thousand pounds.

Although there are several small communities on the subdivision, there are only two grain delivery points on the line: Broad Valley and Fisher Branch. Average grain receipts for the ten year period ending 1974-75 were 708 thousand bushels equal to nine thousand bushels per track of mile.

Given the amount of haulage necessary, the relative isolation of the point, and the potential agricultural production to the north of the end of the subdivision, it is evident that the Fisher Branch area must be served.

C.P. Rail - Arborg Subdivision

- From Rugby Junction to Arborg, Manitoba - 74.3 miles.

This line from Rugby Junction to Stonewall was built by the Dominion Government in 1880 and placed in operation in 1881. It was later transferred to the Canadian Pacific Railway. The line was lengthened to Teulon as the "Teulon Extension" in 1898. The remainder of the line was built in stages with the final portion reaching Arborg in 1910.

The line is laid with 80 and 85 pound steel and has a gross carrying capacity of 220 thousand pounds.

This subdivision serves the centres of Stonewall, Balmoral, Gunton, Teulon, Malonton, Fraserwood, Meleb, Silver and Arborg. This subdivision has a ten year average receipt of 2.3 million bushels of grain equal to 31 thousand bushels per mile of track.

Commission Recommendations for the Interlake Region

The Commission recommends that the Interlake region be serviced in the following manner, given the presence of the basic network lines, the Canadian National Oak Point and the C.P. Rail Winnipeg Beach lines:

1) that the Arborg C.P. Rail subdivision be retained and placed under the jurisdiction of the Prairie Rail Authority;

Three alternatives were defined and examined for servicing the elevators at Fisher Branch. These were:

a) retention of the Canadian National Inwood subdivision,

b) build a new rail link (19 miles) from Arborg to Poplarfield.

c) provide service at Fisher Branch through the operation of off-track elevators.

The economics of each of these options was examined and the Commission has concluded that option c) the operation of off-track elevators represents significantly lower costs on a bushel basis, and at the same time can provide good service.

2) The Commission recommends that:

i) the 9.4 miles of the Canadian National Inwood Subdivision between Fisher Branch and Hodgson be abandoned December 31, 1977; and,

ii) the 71.5 miles of the Inwood Subdivision between Grosse Isle and Fisher Branch be abandoned in 1979 and that service be provided by commercial truck from the elevators at Fisher Branch to Arborg.

The off-line elevator concept is discussed more fully in Chapter 5, Page 144.

TABLE XI.3

Commission Recommendations For Category "B" Branch Lines

REGION 3

SUBDIVISION	FROM	TO	MILEAGE	ADD TO BASIC NETWORK	TRANSFER TO PRAIRIE RAIL AUTHORITY	TO BE ABANDONED				
						1977 June 30	1977 Dec. 31	1978	1979	1980	1981
CN Inwood	Grosse Isle	Fisher Branch	71.5						71.5		
	Fisher Branch	Hodgson	9.4				9.4				
CP Arborg	Rugby	Arborg	74.3		74.3						
TOTAL REGION 3			155.2		74.3		9.4		71.5		

REGION 4

LEGEND

Basic Network, Guaranteed to Jan. 1, 2000

Commission Recommendations

To be added to the Basic Network
To be transferred to The Prairie Rail Authority
To be abandoned, 1977-1981
New construction
Transfer from CP Rail to CNR
Transfer from CNR to CP Rail

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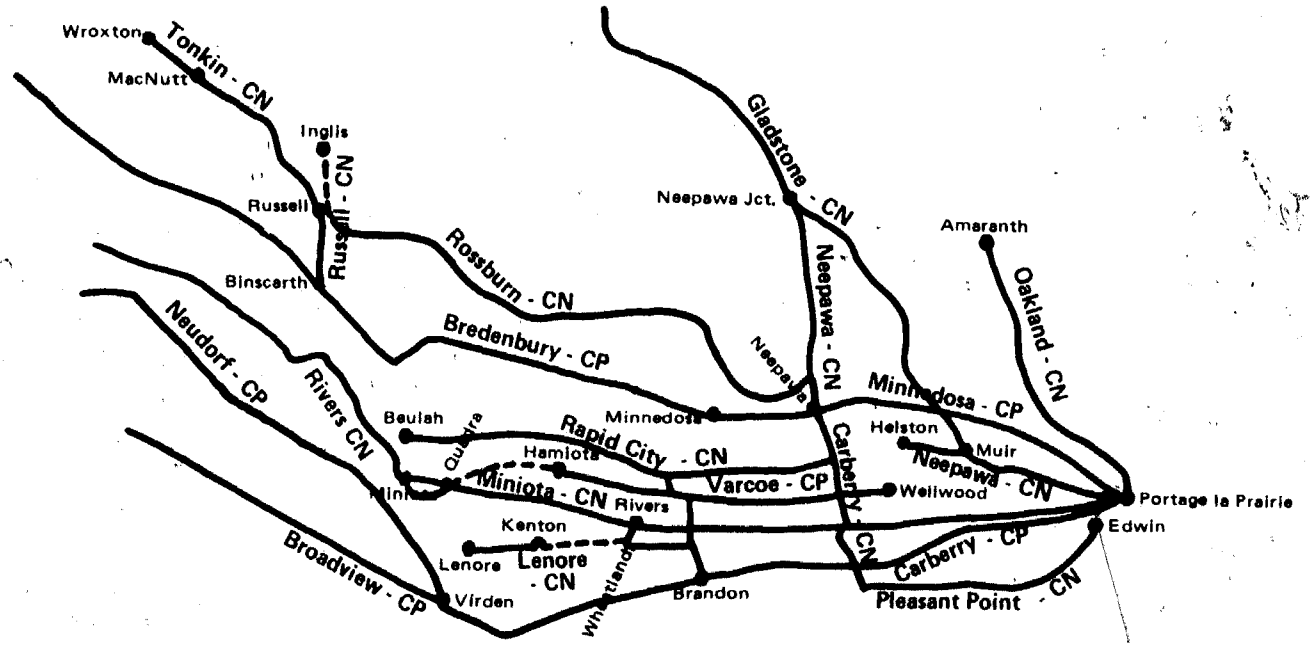

REGION 4

There is no area in Western Canada which is overbuilt with railways to as great an extent as the area to the north-west of Brandon bounded by the Carberry Canadian National Railway line on the south and the Rossburn Canadian National Railway line to the north. In a space of 50 miles, the area is traversed in an east-west direction by eight railway subdivisions. There has been no rail abandonment in this area since construction. Although there has been some rationalization of the grain handling system, it has been relatively slow to occur. In the face of rapidly escalating costs of grain elevator operation, it is evident that many of the fully depreciated, physically sound facilities will be rendered uneconomical in the very near future.

Grain company managers informed the Commission that in 1970 a fully depreciated elevator was economically viable if it had an annual handle of 150 thousand bushels. By 1975 a handle of 250 thousand bushels was required and it is estimated that by 1980, any older elevator handling less than 500 thousand bushels, and any new elevator handling less than one million bushels will be non-viable. Even drastic alterations to handling tariffs will not overcome the difficulties because larger scales and new driveways will be required for the older houses along with new longer car spots.

Just as elevators with low handlings will not be rendered viable even with altered tariffs, many rail lines with low density traffic will not be rendered compensatory even if new rates were established which would permit railways to receive higher revenue for grain haulage.

Under these circumstances, it is evident that a drastic reduction in the number of grain delivery points will occur over the next few years. This reduction in handling facilities is inevitable and in the interests of economy and improved service should be accompanied by a reduction in railway mileage.

To recommend too rapid an adjustment of the system would overtax the building capacity of the grain companies and cause considerable immediate disruption in delivery patterns. As stated elsewhere in this report, the Commission is of the opinion that the configuration of the grain related rail network will eventually be determined by the logical location of the grain elevators. It is considered that with the farmer owned system handling some 70 percent of the grain that in the long run it is the farmer himself who will dictate a practical configuration. However, in this area where alternate hauling distances are short to main and secondary main lines and where the majority of the elevators are either not viable or marginally viable, fairly drastic alterations are warranted.

REGION 4

CP Rail - Miniota Subdivision

- From Brandon to Miniota, Manitoba - 71.7 miles, plus a 3.6 mile spur running eastwards from Gautier Junction into Rapid City.

In 1886, a railway line was constructed from Minnedosa to Gautier by the Saskatchewan and Western Railway. In 1888 the Great North Central Railway built a line from Gautier to Hamiota. It was extended westward to Miniota and southward to Brandon in 1889-90. On June 11, 1900, operation of all this trackage was taken over by the Canadian Pacific Railway. The section from Minnedosa to Rapid City was abandoned in 1963, leaving the 3.6 mile "Rapid City Spur".

The line is constructed with 85 pound steel and has gross carrying capacity of 220 thousand pounds.

This subdivision serves seven grain delivery points: Forrest, Rapid City, Floors, Oak River, Hamiota, Crandall and Miniota.

Grain receipts on this subdivision averaged 2.1 million bushels per year in the ten year period ending 1974-75. Average receipts equal 30 thousand bushels per mile of track.

The Commission recommends that:

1) the CP Rail Miniota subdivision be connected to the Canadian National Railway Rivers subdivision at Quadra;

2) the 11.4 mile section of the Miniota subdivision

from Quadra to Hamiota be retained and placed under the jurisdiction of the Prairie Rail Authority;

3) the 8.8 mile portion of the Miniota subdivision from Quadra to Miniota be abandoned in 1981;

4) the 55.0 mile portion of the Miniota subdivision from Hamiota to Brandon be abandoned in 1981; and

5) upon abandonment of the Brandon to Hamiota section that the Hamiota to Quadra section be operated by the Canadian National Railway.

CP Rail - Lenore Subdivision

- From Forrest to Lenore, Manitoba - 40.9 miles.

The line was built by the Canadian Pacific Railway in 1901-02 as the "Lenore Extension" of "The Great Northwest Central Railway Co.", a company leased by the Canadian Pacific Railways on April 6th, 1900. It went into operation on June 7th, 1903.

The line is constructed with 80 pound steel and has a gross carrying capacity of 220 thousand pounds.

The Lenore subdivision is rather unique in that it serves a major CP Rail gravel pit located near Wheatland at Mile 16.0. CP Rail are rather indefinite about the future of this pit which provides crushed rock ballast. However, indications are that CP Rail will continue service to this pit for the forseeable future. The company indicated that different standards apply for "on company

service" tracks and railways for public use. They request therefore that this subdivision be abandoned as far as commercial use is concerned.

This subdivision has three grain delivery points: Bradwardine, Kenton and Lenore.

Grain receipts on this subdivision averaged 924 thousand bushels per year for the ten year period ending 1974-75 representing 22 thousand bushels per mile of track.

Manitoba Pool Elevator Company stated that the Lenore elevator is rapidly becoming functionally obsolete.

Although there is no grain delivery facility at Wheatland, the Oo-za-we-kwun Industrial Centre at this point does use the rail service to a limited extent and has potential for greater utilization.

The Commission recommends that every opportunity be extended for the development of industry in Western Canada and that this facility be served by rail.

The Commission recommends that:

1) the CP Rail Lenore subdivision be connected by a .4 mile link to the Canadian National Railway Rivers subdivision at a point near Wheatland;

2) the 15.4 mile portion of the subdivision from the connection to Kenton be retained and placed under the jurisdiction of the Prairie Rail

Authority and operated by Canadian National Railway; and

3) the 19.0 mile section of this subdivision between Wheatland and Forrest be abandoned in 1980.

4) the 6.9 mile section of this subdivision between Kenton and Lenore be abandoned in 1981.

The Canadian National Railways Carberry, Neepawa, Rapid City and Rossburn Subdivisions are considered sequentially because of the common origin of trains and the operation of the subdivisions.

The Canadian National railway trains and crews servicing these four subdivisions originate in the Symington Yards at Winnipeg. They deliver trains of empties out over the Rivers Subdivision to Petrel Junction, north over the Carberry Subdivision to Carberry Junction, thence on the Neepawa Subdivision to Neepawa. Depending on car allocations, trains are made up in Neepawa to service the Rapid City, the Rossburn, the Neepawa as well as the Ste Rose Subdivision.

At one time trains and crews were located in Neepawa for the servicing of these subdivisions. However, this meant that crews were retained full time for operations "as and when required". Canadian National felt that it was more efficient to run trains from Winnipeg to service these subdivisions on an "as and when required" basis.

Canadian National - Carberry Subdivision

- From Petrel Junction to Carberry Junction, Manitoba - 10.0 miles

This line was constructed in 1903 with light rail which was replaced with 80 and 85 pound rail in 1955-56, and has a gross carrying capacity of 220 thousand pounds.

The sole purpose of this portion of the Carberry subdivision is to provide Canadian National access to the Neepawa, Rapid City

and Rossburn subdivisions.

Given the recommendations for alternate servicing of these other subdivisions, it is recommended that the Carberry subdivision Mile 13.0 to Mile 23.0 be abandoned in 1978.

Canadian National - Neepawa Subdivision

- From Muir to Helston, Manitoba - 11.5 miles
- From Carberry Junction to Neepawa Junction, Manitoba - 47.1 miles.

This line was built in 1902-03 by Canadian Northern Railway Company. It is constructed with 60 and 80 pound steel and, except for a few miles used for bridge traffic, has a gross carrying capacity of 177 thousand pounds.

Currently the subdivision is operated in two sections and will be dealt with separately here because of the variation in operations.

a) - Muir to Carberry Junction - 11.5 miles

This portion of the subdivision is laid with 60 pound steel and has a gross carrying capacity of 177 thousand pounds. This portion of the subdivision serves one delivery point at Helston. Grain receipts have averaged 259 thousand bushels per year for the ten year period ending 1974-75, equal to 23 thousand bushels per mile of track.

The Commission recommends that the 11.5 mile section of the Neepawa Subdivision from Muir to Helston be abandoned in 1978.

b) - Carberry Junction to Neepawa Junction (McCreary)- 47.1 miles.

The section from Carberry Junction, Mile 23.5 to Junction

with the Rapid City subdivision at Hallboro, Mile 26.9, serves as an access to the Rapid City and Rossburn subdivisions.

The portion of the subdivision from Hallboro, Mile 26.9, to Neepawa, Mile 33.1, serves as access to other subdivisions.

From Neepawa, Mile 33.1, to Rossburn Junction, Mile 37.8, the subdivision provides access to the Rossburn subdivision.

The portion of the line from Rossburn Junction, Mile 37.8, to Neepawa Junction, Mile 70.6, serves the delivery points of Eden and Kelwood.

Grain receipts on this portion of the subdivision for the ten year period ending 1974-75 averaged 672 thousand bushels per year, representing 20 thousand bushels per mile of track.

The Manitoba Pool Elevators at Eden are in poor condition and the company has no plans to renovate. The new Manitoba Pool Elevator at Neepawa, 11 miles to the south, was planned to accommodate the grain currently delivered to Eden. It is recognized that for many producers, abandonment of the line will entail an extra haul of 11 miles. However, through the utilization of the alternate facilities at Neepawa, Plumas and Arden, few if any producers will have more than a 20 mile haul to their nearest delivery point.

The United Grain Growers Limited elevators at Kelwood are also in poor condition. Currently a new large United Grain Growers elevator is under construction at McCreary ten miles to the north. Abandonment of this subdivision and the phasing out

of Kelwood as a delivery point means an additional 10 mile haul for some producers, but no producer would be forced to haul more than 20 miles to the nearest delivery point.

The Commission recommends that:

1) the 9.6 mile section of the Neepawa Subdivision between Carberry Junction and Neepawa be abandoned in 1978;

2) the 32.8 mile section of this subdivision between Rossburn Junction and Neepawa Junction be abandoned in 1978;

3) the 4.7 mile section of the Neepawa subdivision between Neepawa and Rossburn Junction be retained and placed under the jurisdiction of the Prairie Rail Authority;

4) the Canadian National Railways have access to the Neepawa Subdivision through joint running rights over the CP Rail Minnedosa Subdivision from Portage la Prairie or Gladstone.

Canadian National - Rossburn Subdivision

- From Rossburn Junction to Russell, Manitoba - 104.3 miles

The first 11 miles of this line were built by the Morden and North West Railway in 1902-03. The remainder was constructed by the Canadian Northern and put into operation in 1908.

The first 21 miles and the last mile are laid with 56 pound rail and the remainder with 60 pound rail. The subdivision has a gross carrying capacity of 177 thousand pounds.

This subdivision serves ten delivery points: Russell, Clanwilliam, Erickson, Sandy Lake, Elphinstone, Oakburn, Vista, Rossburn, Angusville and Silverton.

Grain receipts for the ten year period ending 1974-75 averaged 4.4 million bushels per year, representing 43 thousand bushels per mile of track.

The Commission recommends that:

1) this subdivision be retained and placed under the jurisdiction of the Prairie Rail Authority;
2) the railway examine the possibility of shortening the subdivision by building a link from a point near Mile 10.0 on the Rossburn Subdivision to a point near Franklin on the CP Rail Minnedosa subdivision and that the subdivision be serviced by extending the joint running rights for Canadian National over the CP Rail Minnedosa subdivision to the point of linkage; and
3) the portion from Mile 0.00 to the link, approximately 10.0 miles then be abandoned.

The Commission also recommends that Canadian National Railways and CP Rail carry out a joint study of the economics of constructing a link from approximately Mile 10.0 of the Canadian National Rossburn Subdivision to a point on the CP Rail Minnedosa Subdivision near Franklin. Two alternatives are then

available for operation of the Rossburn Subdivision - 1) by CP Rail, 2) by Canadian National with running rights over CP Rail from Portage la Prairie to Franklin. This connecting link would free 10 miles of the Rossburn Subdivision and 4.7 miles of the Neepawa Subdivision for abandonment. Results of this study are to be made available to the Minister of Transport by December 31, 1977.

As indicated in the recommendation on the CP Russell Subdivision, a connection between Canadian National Railway Rossburn Subdivision and the CP Rail Russell Subdivision should be made at Russell to allow Canadian National to service the current Russell CP Rail Subdivision as an extension of the Rossburn Subdivision.

Canadian National - Rapid City Subdivision

- From Hallboro to Beulah, Manitoba - 74.4 miles

This line was constructed by the Western Extension Railway Company between the years 1909 and 1910, with 60 pound rail and has a gross carrying capacity of 177 thousand pounds.

This subdivision serves seven delivery points: Mentmore, Moline, Cardale, McConnell, Decker, Isabella and Beulah.

Grain receipts on this subdivision for the ten year period ending 1974-75 averaged 1.9 million bushels, representing 26 thousand bushels per mile of track.

All delivery points on the line are operated by Manitoba Pool Elevators. Manitoba Pool have stated that the current economics of operation of elevators are such that all of the points on the subdivision would be economically non-viable if major renovations

or reconstruction were necessary.

The new Manitoba Pool Elevator at Neepawa was designed to accommodate the grain from the Mentmore area.

Plans are currently being made by Manitoba Pool Elevators to build on the Canadian National Railway main line in the vicinity of Miniota. It is contemplated that this new facility will accommodate the grain from Beulah and Isabella.

The facilities at Decker are considered to be in poor condition and are unlikely to be renovated. Likewise, the Moline facilities are also prime candidates for closure.

One of the elevators at McConnell is in good condition with a large scale. McConnell is within eight miles of Hamiota to the south. Hamiota is a viable community with a variety of services on a line recommended for retention. McConnell is within 15 miles of Shoal Lake to the north. The average increased haul from this point should the line be abandoned is estimated at less than five miles and the longest total haul to the nearest elevator not over 15 miles.

Cardale is an independent Manitoba Pool Association with a good facility and a ten year average handle of 359 thousand bushels, the highest of any point on the line. The current average haul distance to Cardale is four miles; the average hauling distance after abandonment would be approximately eight miles and the greatest hauling distance of any farmer to the closest point would be not over 15 miles.

Several different options for providing efficient and effective service to parts of this subdivision were examined. These included links:

a) to the CP Rail Miniota subdivision at Rapid City;

b) between Floors and Cardale, or

c) between Hamiota and a point near McConnell.

Another option examined was a link between Canadian National Railway Rivers subdivision near Miniota to the Rapid City subdivision near Beulah.

In all cases, the pending phasing out of grain elevators due to the changing economics of grain handling combined with the reasonable hauling distance to alternate points rendered the options invalid.

In consideration of the facts presented to the Commission, it is the recommendation of the Commission that the Canadian National Rapid City subdivision be abandoned in 1978.

Canadian National - Oakland Subdivision

- From Delta to Amaranth, Manitoba - 53.3 miles.

This subdivision was built by the Northern Extension Railway between the years 1889 and 1913. It is laid with 60 pound steel except from Mile 0.00 to 0.08 which was laid with 85 pound steel in 1952 and has a gross carrying capacity of 177 thousand pounds.

This subdivision serves four grain delivery points: Oakland, Longburn, Langruth and Amaranth.

Grain receipts on this line for the ten year period ending

1974-75 averaged 1.2 million bushels, representing 23 thousand bushels per mile of track.

It is not clear to the Commission exactly what the status is of the gypsum mining activities at Amaranth. However, it is known that there are large deposits of high quality gypsum at Amaranth and it is almost certain that given the limited gypsum deposits in Manitoba these will be developed within the next few years. When these deposits are exploited, rail haul would appear the logical transportation mode.

The Commission recommends that this subdivision be retained and placed under the jurisdiction of the Prairie Rail Authority.

The Commission also recommends that Canadian National Railways and CP Rail carry out a joint study of the economies of constructing a link between the Canadian National Oakland subdivision at Cawdor and the CP Rail Minnedosa subdivision at Westbourne. This would permit the abandonment of approximately 20 miles of the Oakland subdivision from Portage La Prairie to Cawdor. This joint study should then examine the options of CP Rail operating the Oakland subdivision, and of Canadian National continuing operation of the Oakland subdivision by having running rights over the CP Rail Minnedosa subdivision. Results of this joint study are to be made available to the Minister of Transport by December 31, 1977.

CP Rail - Russell Subdivision

- Binscarth to Inglis, Manitoba - 23.9 miles

The Russell subdivision was constructed in 1887 as the "Shell

River Branch" of the "Manitoba and Northwestern Railway Company of Canada", from Binscarth northward to Russell. Canadian Pacific Railway placed this part in operation on June 11th, 1900. Extensions to the line were placed in operations as follows: Russell to Cracknell, December 28th, 1920; Cracknell to Inglis, November 22nd, 1922.

The line was constructed with a mixture of 72, 80 and 85 pound steel. Gross carrying capacity is 220 thousand pounds.

There are three grain delivery points on the line: Russell, Cracknell and Inglis.

Grain receipts on the subdivision for the ten year period ending 1974-75 were 1.4 million bushels, representing 57 thousand bushels per mile of track.

The Commission recommends that:

1) the CP Rail Russell subdivision immediately be joined to the Canadian National Railway Rossburn subdivision at Russell;
2) the portion of the Russell subdivision from Russell to Inglis be retained and operated by Canadian National Railway and placed under the jurisdiction of the Prairie Rail Authority; and
3) the portion of the Russell CP Rail subdivision from Binscarth, Mile 0.00, to Russell, Mile 11.0, be abandoned December 31, 1977.

Canadian National - Tonkin Subdivision

- From Russell, Manitoba to Wroxton, Saskatchewan - 48.4 miles.

This line was built by the Canadian Northern Railway Company between 1908 and 1928. It is laid with 60 pound steel and has a gross carrying capacity of 177 thousand pounds. The total Tonkin subdivision is 112 miles in length and extends as far west as Parkerview, Saskatchewan. The section between Wroxton and Parkerview is dealt with in Region 7.

The portion of the subdivision from MacNutt to Wroxton has three delivery points: MacNutt, Calder and Wroxton. These points combined averaged 1.7 million bushels of handlings over the past ten years, equal to 105 thousand bushels per mile of track.

The Commission recommends that:

1) the portion of the subdivision from Russell, Mile 0 to MacNutt, Saskatchewan, Mile 32.7, be abandoned on June 30th, 1977;

2) the portion from MacNutt, Mile 32.7 to Wroxton, Mile 48.4, be retained and placed under the jurisdiction of the Prairie Rail Authority.

CP Rail - Varcoe Subdivision

- From Varcoe to Wellwood, Manitoba - 28.8 miles.

The line was constructed by Canadian Pacific Railway during the years 1889 - 1905. It is laid with 80 and 85 pound rail and has a gross carrying capacity of 220 thousand pounds.

The Wellwood elevator was closed in 1974 when Petrel opened

and the one at Oberon also closed in 1974 when Harte opened. There has therefore been no service beyond Brookdale for the past three years.

There are currently two delivery points on the subdivision: Brookdale and Moorepark.

Grain receipts on this subdivision for the ten year period ending 1974-75 averaged 740 thousand bushels, equal to 26 thousand bushels per mile of track.

Both United Grain Growers Limited and Manitoba Pool Elevators have built excellent new high throughput elevators in the vicinity on the main line Canadian National Railway to the south and at Neepawa on the Minnedosa CP Rail subdivision to the north. These elevators have adequate capacity and are within a reasonable hauling distance to accommodate the grain normally hauled to Brookdale.

The Manitoba Pool Elevator at Justice with a capacity to handle a ratio of less than two is currently being modified and can accommodate much of the grain currently handled at Moorepark while Minnedosa can accommodate the remainder.

The Commission recommends that the CP Rail Varcoe subdivision be abandoned on December 31, 1977. In so doing, the Commission assumes much of the grain will be hauled to Justice and request the assurance that the Canadian National Railway enforce the regulation with respect to the length of time that a train is allowed to obstruct the public crossing.

Canadian National - Pleasant Point Subdivision

- From Brandon Junction to Edwin, Manitoba - 40.9 miles.

The line was constructed by the Western Extension Railway between the years 1903 and 1904. The line has 85 pound steel with a gross carrying capacity of 220 thousand pounds.

This subdivision which formerly ran from Portage La Prairie to Brandon Junction was severed by the construction of the Assiniboine River floodway above Portage. The Province of Manitoba provided subsidy to the Canadian National Railway to serve the points from Brandon Junction rather than Portage. This explains the reason for the subdivision operation being backward to the normal traffic flow.

This subdivision currently serves one grain delivery point at Edwin.

With a ten year average handlings for the period ending 1974-75 of 175 thousand bushels, the point has a very limited economic life. Traffic density for this subdivision is equal to four thousand bushels per mile of track.

The Commission recommends that the Pleasant Point subdivision be abandoned on December 31st, 1977.

TABLE XI.4

Commission Recommendations For Category "B" Branch Lines

REGION 4

SUBDIVISION	FROM	TO	MILEAGE	ADD TO BASIC NETWORK	TRANSFER TO PRAIRIE RAIL AUTHORITY	TO BE ABANDONED				
						1977		1978	1979	1980	1981
						June 30	Dec.31				
CP Russell	Russell	Binscarth	11.0				11.0				
	Russell	Inglis	12.9		12.9(1)						
CN Tonkin	Russell	MacNutt	32.7			32.7					
	MacNutt	Wroxton	15.7		15.7						
CN Rossburn	Rossburn Jct	Russell	104.3		104.3(3)						
CN Neepawa	Muir	Helston	11.5					11.5			
	Carberry Jct.	Neepawa	9.6					9.6			
	Neepawa	Rossburn Jct.	4.7		4.7(3)						
	Rossburn Jct.	Neepawa Jct.	32.8					32.8			
CN Carberry	Carberry Jct.	Petrel Jct.	10.0					10.0			
CN Rapid City	Hallboro	Beulah	74.4					74.4			
CN Oakland	Delta Jct.	Amaranth	53.3		53.3						
CP Varcoe	Wellwood	Varcoe	28.8				28.8				
CN Pleasant Point	Edwin	Brandon Jct.	40.9				40.9				
CP Lenore	Lenore	Kenton	6.9								6.9
	Kenton	Wheatland	15.4		15.4(1)(2)						
	Wheatland	Forrest	19.0							19.0	
CP Miniota	Quadra	Hamiota	11.4		11.4(1)						
	Quadra	Miniota	8.8								8.8
	Hamiota	Brandon	55.0								55.0
TOTAL REGION 4			559.1		217.7	32.7	80.7	138.3		19.0	70.7

(1) To Be Transferred to CNR.
(2) Link to Revers Subdivision (Wheatland to Rivers - .4 miles).
(3) CN to have running rights over CP Minnedosa Subdivision between Portage and Neepawa.

REGION 5

LEGEND

Basic Network, Guaranteed to Jan. 1, 2000

Commission Recommendations

To be added to the Basic Network
To be transferred to The Prairie Rail Authority
To be abandoned, 1977-1981
New construction
Transfer from CP Rail to CNR
Transfer from CNR to CP Rail

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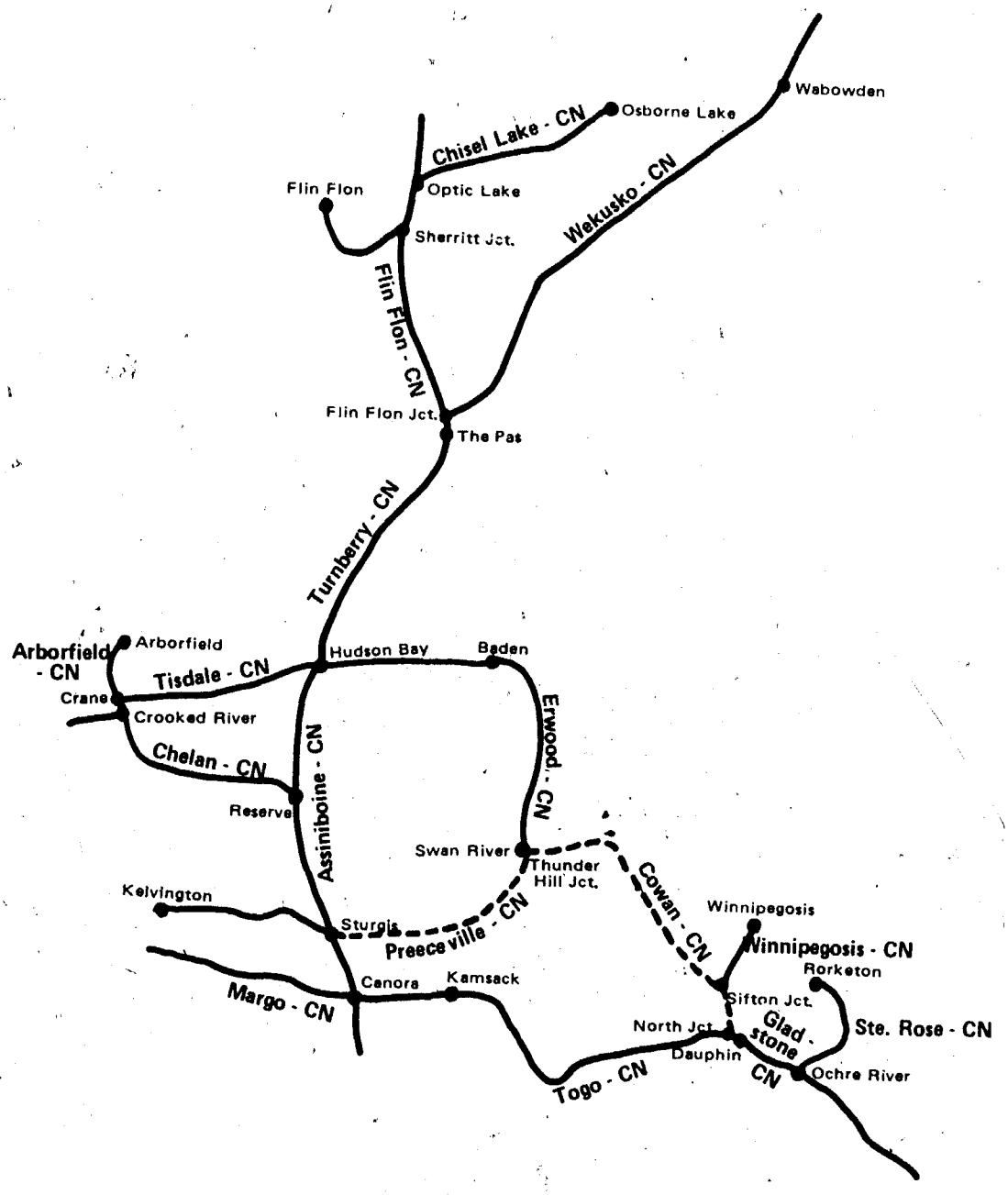

REGION 5

Canadian National - Ste. Rose Subdivision

- From Ochre River to Rorketon, Manitoba - 37.1 miles.

This line was constructed between the years 1909 and 1924 by the Canadian Northern Railway. It is laid with a mixture of 55, 56 and 60 pound steel. Gross carrying capacity of the line is 177 thousand pounds.

There are two grain delivery points on the line: Ste Rose and Rorketon at Mile 37.1. Grain receipts for the ten year period ending 1974-75 averaged 763 thousand bushels per year equal to 20 thousand bushels per mile of track.

It is forecast that several thousand acres of land to the east of this subdivision will come under cultivation as drainage in the area improves and new technology is applied to crop production.

The Commission is of the opinion that although the retention of the total subdivision cannot be justified on economic grounds, the Rorketon delivery point cannot be abandoned at present because of the hardships it would inflict on many producers of the area.

The Commission recommends that the Ste Rose subdivision be retained and placed under the jurisdiction of the Prairie Rail Authority. The Commission further recommends that this subdivision be serviced out of the Canadian National Railway's Dauphin divisional point instead of Winnipeg.

Canadian National - Winnipegosis Subdivision

- From Sifton Junction to Winnipegosis, Manitoba - 20.1 miles.

This line was constructed in 1897 by the Lake Manitoba Railway and Canal Company. It was laid with 56 pound rail with a gross carrying capacity of 177 thousand pounds.

This subdivision serves two grain delivery points: Fork River and Winnipegosis. Grain receipts for the ten year period ending 1974-75 averaged 783 thousand bushels equal to 39 thousand bushels per mile of track.

This is an "end of steel" situation in which the farmers at the north end of the subdivision already experience considerable hardship due to inadequate services. The removal of Fork River and Winnipegosis as delivery points would aggravate these difficulties.

There is some light industry at Winnipegosis which used some 80 cars of raw material in 1975. The Commission suggests that every encouragement should be lent to further development of this nature.

The Commission recommends that the Winnipegosis subdivision be retained and placed under the jurisdiction of the Prairie Rail Authority.

Canadian National - Cowan Subdivision

- From North Junction to Swan River, Manitoba - 98.5 miles.

This line was constructed by Winnipeg Great Northern Railway between the years 1896 and 1899 of 85 pound rail. The gross carrying capacity is 220 thousand pounds.

The grain delivery points served by the subdivision are Sifton, Ethelbert, Pine River, Renwer and Minitonas. The United Grain Growers elevator at Renwer is scheduled to close at the end of the 1976-77 crop year.

Grain receipts on this line averaged 1.9 million bushels for the ten year period ending 1974-75 equal to 19 thousand bushels per mile of track.

This subdivision is the main access route to the highly productive Swan River area.

This subdivision also serves to bridge grain and pulpwood traffic as well as a thrice weekly passenger service between Winnipeg and Churchill, and a five times weekly general freight service.

The high level of utilization of this subdivision along with the high degree of isolation which would result from its abandonment make it imperative that this subdivision be retained.

The Commission recommends that the Cowan subdivision be retained and placed in the basic network, guaranteed until January 1st, 2000.

Canadian National - Erwood Subdivision

- From Swan River, Manitoba to Hudson Bay, Saskatchewan-101.1 miles.

This line was constructed by Canadian Northern Railway between the years 1899 and 1903, of 85 pound rail. Gross carrying capacity on the line is 220 thousand pounds.

There are grain delivery points at Swan River, Bowsman and Birch River. Grain receipts for the ten year period ending 1974-75 averaged 3.0 million bushels per year equal to 30 thousand bushels per mile of track. In addition to the grain traffic, between 600 and 1,000 carloads of pulpwood per year are generated on the subdivision, while 500 carloads of petroleum fuel and miscellaneous items are taken in.

Over three thousand carloads of crushed limestone are hauled off this subdivision each year from the mine north of Mafeking. A new pit has recently been brought into production providing an estimated 25 year supply.

The suggestion has been made that the traffic which currently moves westward from the mine be diverted south over the Preeceville subdivision toward its destination at Regina. The railroad from Hudson Bay to the mine is in good condition. It appears that there is little potential for rail related activity on the northern section of the subdivision.

The Commission recommends that:

1) the 50.5 mile section of this subdivision between Swan River and Baden be retained and placed under the jurisdiction of the Prairie Rail Authority; and
2) the 50.6 mile section of this subdivision between Baden and Hudson Bay be abandoned in 1978.

Canadian National - Preeceville Subdivision

- From Thunderhill Junction, Manitoba to Kelvington, Saskatchewan - 113.6 miles.

The Assiniboine subdivision runs for 2.02 miles from Sturgis Junction to Lilian as a connecting link between the west and east portions of the Preeceville subdivision. The first portion of the subdivision from Mile 0.0 to Benito was constructed in 1905-06 by the Western Extension Railway. The remainder of the line was built by Canadian Northern Railway between the years 1909 and 1921. It is

laid with 56 and 60 pound rail and has a gross carrying capacity of 177 thousand pounds.

There are 12 grain delivery points on the subdivision: Kenville, Durban, Benito, Arran, Pelly, Norquay, Hyas, Stenen, Preeceville, Lintlaw, Nut Mountain and Kelvington. The ten year average grain receipts on this subdivision are 8.3 million bushels, equal to 73 thousand bushels per mile of track.

The Commission recommends that:

1) the portion of the subdivision from Thunderhill Junction to Sturgis be retained and placed in the basic network, guaranteed until January 1st, 2000; and

2) the portion of the subdivision from Lilian (West Sturgis) to Kelvington be retained and placed under the jurisdiction of the Prairie Rail Authority.

Canadian National - Chelan Subdivision

- From Reserve to Crooked River, Saskatchewan - 60.1 miles.

The line was constructed in the years 1928-29. The rail consists of a mixture of 80 and 85 pound steel that is in fair condition. Gross carrying capacity is limited to 220 thousand pounds.

Grain receipts on the subdivision have averaged two million bushels per year in the ten years ending 1974-75. Average receipts equal 35 thousand bushels per mile of track.

Two grain companies, Saskatchewan Wheat Pool and United Grain Growers operate thirteen elevators at six points: Weekes, Somme

Over three thousand carloads of crushed limestone are hauled off this subdivision each year from the mine north of Mafeking. A new pit has recently been brought into production providing an estimated 25 year supply.

The suggestion has been made that the traffic which currently moves westward from the mine be diverted south over the Preeceville subdivision toward its destination at Regina. The railroad from Hudson Bay to the mine is in good condition. It appears that there is little potential for rail related activity on the northern section of the subdivision.

The Commission recommends that:

1) the 50.5 mile section of this subdivision between Swan River and Baden be retained and placed under the jurisdiction of the Prairie Rail Authority; and
2) the 50.6 mile section of this subdivision between Baden and Hudson Bay be abandoned in 1978.

Canadian National - Preeceville Subdivision

- From Thunderhill Junction, Manitoba to Kelvington, Saskatchewan - 113.6 miles.

The Assiniboine subdivision runs for 2.02 miles from Sturgis Junction to Lilian as a connecting link between the west and east portions of the Preeceville subdivision. The first portion of the subdivision from Mile 0.0 to Benito was constructed in 1905-06 by the Western Extension Railway. The remainder of the line was built by Canadian Northern Railway between the years 1909 and 1921. It is

laid with 56 and 60 pound rail and has a gross carrying capacity of 177 thousand pounds.

There are 12 grain delivery points on the subdivision: Kenville, Durban, Benito, Arran, Pelly, Norquay, Hyas, Stenen, Preeceville, Lintlaw, Nut Mountain and Kelvington. The ten year average grain receipts on this subdivision are 8.3 million bushels, equal to 73 thousand bushels per mile of track.

The Commission recommends that:

1) the portion of the subdivision from Thunderhill Junction to Sturgis be retained and placed in the basic network, guaranteed until January 1st, 2000; and

2) the portion of the subdivision from Lilian (West Sturgis) to Kelvington be retained and placed under the jurisdiction of the Prairie Rail Authority.

Canadian National - Chelan Subdivision

- From Reserve to Crooked River, Saskatchewan - 60.1 miles.

The line was constructed in the years 1928-29. The rail consists of a mixture of 80 and 85 pound steel that is in fair condition. Gross carrying capacity is limited to 220 thousand pounds.

Grain receipts on the subdivision have averaged two million bushels per year in the ten years ending 1974-75. Average receipts equal 35 thousand bushels per mile of track.

Two grain companies, Saskatchewan Wheat Pool and United Grain Growers operate thirteen elevators at six points: Weekes, Somme

Carragana, Porcupine Plain, Chelan and Bjorkdale. Company condition ratings of their elevators on the subdivision are three good, seven fair and three poor.

The area served by this subdivision is isolated from the remainder of the grain growing areas of Saskatchewan. The Porcupine Provincial Forest acts as a barrier to the south and east. The Northern Provincial Forest lies 15 to 20 miles north of the line and acts as a northern barrier.

Alternate delivery points exist on the CN Tisdale subdivision at distances ranging from 11 to 27 miles from stations on the Chelan subdivision.

An alfalfa dehydrating plant north of Porcupine Plain is dependent on rail service for shipping its production.

Some estimates at the local hearing indicate that 15 to 18 percent of the acreage suitable for crop production has yet to be brought under cultivation.

The Commission recommends that the Chelan subdivision be retained and placed under the jurisdiction of the Prairie Rail Authority.

Canadian National - Arborfield Subdivision

- From Crane Junction to Arborfield, Saskatchewan - 19.4 miles.

This line was constructed in 1929. The rail is in fair condition and except for .29 miles of 60 pound steel, it is all 80 pound steel. Gross carrying capacity on the line is 177 thousand pounds.

Grain receipts on this subdivision have averaged 1.2 million bushels per year in the ten years ending 1974-75. Average receipts equal 64.5 thousand bushels per mile of track.

Agricultural production patterns have recently shifted from grain to alfalfa pellets as indicated by the following table:

CARLOADS BY COMMODITY

Year	Grain	Alfalfa Pellets
1971	866	478
1972	934	703
1973	594	563
1974	439	829

There are two delivery points on the subdivision: Arborfield and Zenon Park. Three grain companies operate six elevators at these two stations. The elevators on the line are in fair condition. With upgrading of scales and driveways at some plants, the elevator facilities will be adequate for many years.

The area served by the Arborfield subdivision is somewhat isolated. The Pasquia Hills to the east of the Northern Provincial Forest act as a barrier to the east. The Carrot River lies between this subdivision and the Canadian National Brooksby subdivision and prevents easy access to the north and west.

The Commission recommends that the Arborfield subdivision be retained and placed under the jurisdiction of the Prairie Rail Authority.

TABLE XI.5

Commission Recommendations For Category "B" Branch Lines

REGION 5

SUBDIVISION	FROM	TO	MILEAGE	ADD TO BASIC NETWORK	TRANSFER TO PRAIRIE RAIL AUTHORITY	TO BE ABANDONED				
						1977		1978	1979	1980	1981
						June 30	Dec. 31				
CN Arborfield	Crane	Arbrofeild	19.4		19.4						
CN Chelan	Reserve	Crooked River	60.1		60.1						
CN Preeceville	Thunderhill Jct.	Sturgis Jct.	65.1	65.1							
	Stugis Jct.	Kelvington	48.5		48.5						
CN Winnipegosis	Sifton	Winnipegosis	20.1		20.1						
CN Ste. Rose	Ochre River	Rorketon	37.1		37.1						
CN Cowan	North Jct.	Swan River	98.5	98.5							
CN Erwood	Swan River	Baden	50.5		50.5						
	Baden	Hudson Bay	50.6					50.6			
TOTAL REGION 5			449.9	163.6	235.7			50.6			