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THE COMMISSION ON THE COSTS OF TRANSPORTING GRAIN BY RAIL

REPORT

VOLUME II
NOVEMBER 1977

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Available by mail from

Printing and Publishing
Supply and Services Canada
Ottawa, Canada K1A 0S9

or through your bookseller.

Catalogue No.: CP32-24/1977-2
ISBN 0-660-01566-8

Canada: $5.00
Other countries: $6.00

Price subject to change without notice.

VOLUME II

To His Excellency the Governor General in Council,

MAY IT PLEASE YOUR EXCELLENCY,

I, the Commissioner appointed by an Order in Council dated 18th April, 1975, to conduct an inquiry to determine the costs and revenues of grain traffic and the relationship of such costs and revenues:

BEG TO SUBMIT TO YOUR EXCELLENCY

VOLUME II OF MY REPORT

TABLE OF CONTENTS

Chapter		Page
	REPORT SUMMARY	ix
I.	INTRODUCTION	1
	Report Outline	2
	Conduct of the Inquiry	3
	Research Objective and Limitations	4
II.	RATIONALIZATION—COST IMPACT	11
	Background	11
	Impact on Volume-Related Costs	14
	1974 Grain Transportation Output Unit Characteristics	17
	1974 Output Units—Rationalized System	25
	Origin Locations and Volumes	26
	Car Types	33
	Routing	44
	Output Unit Development	45
	Car-Related Output Units	49
	Train-Related Output Units	51
	Conclusions	57
	Volume-Related Costs—Rationalized System	59
	Grain Dependent Lines—Cost Impact	61
	Grain Dependent Lines—Structure Changes	61
	Grain Dependent Lines—Cost Changes	68
	Impact on 1974 Variable Costs	72

TABLE OF CONTENTS (Cont.)

Chapter		Page
III.	PRAIRIE RAIL AUTHORITY—COST IMPACTS	77
	PRA Lines—Characteristics.....	79
	Railway Variable Costs.....	82
	Line-Related Costs.....	84
	Volume-Related Costs.....	89
	Summary.....	93
IV.	RATIONALIZATION AND PRA—REVENUE AND REVENUE SHORTFALL IMPACTS	95
	Revenue.....	95
	Freight Rates.....	96
	Miscellaneous Revenues.....	97
	Branch Line Subsidy.....	98
	Summary.....	99
	Revenue Shortfall.....	101
	Rationalization.....	102
	Rationalization and PRA Combined.....	104
V.	OTHER GHTC RECOMMENDATIONS	109
	Rail Operations and Equipment.....	110
	Open Interchange.....	113
	General.....	114
	Churchill.....	121
	Prince Rupert.....	126

TABLE OF CONTENTS (Cont.)

Chapter		Page
V.	OTHER GHTC RECOMMENDATIONS (Continued)	
	Railway Equipment	130
	Interchangeable Government Hopper Cars	131
	Future Car Acquisitions	133
	Box Car Modifications	137
	Rail Network Changes	138
	Electrification and Operating Rights	139
	Clinton Ashcroft Link	140
	Northern Development Railways Department	141
	Railway Rates	143
	Elimination of Stop-Off Charges	144
	Retention of Statutory Rates	145
	Railroad Subsidy Payments	149
	Resolution of Historic Subsidy Issues	154
	Commission Comment	155
VI.	PRAIRIE RAILWAY LINES—COST PROFILES	159
	Categories	159
	Characteristics	161
	Line Characteristics	162
	Length	162
	Carrying Capacity	163
	Car Characteristics	164
	Lading Weight	164
	Tare Weight	165
	Car-Days	166

TABLE OF CONTENTS (Cont.)

Chapter		Page
VI.	PRAIRIE RAILWAY LINES—COST PROFILES (Continued)	
	Train Characteristics	167
	Diesel Units	167
	Train Size	168
	Train Weight	169
	Variable Costs	171
	Line-Related Costs	171
	Volume-Related Costs	175
	Summary	178

LIST OF TABLES

Table		Page
1	Summary of GHTC Rationalization Recommendations	12
2	1974 Direct Shipment Carloads Originating on Subdivisions that Would Not be Affected by Rationalization	20
3	Comparison of Selected Loaded Movement Output Units Per Car Initial Haul vs. Total Haul	22
4	Comparison of Average Load Per Car for Tons Transferred Between CP Rail and Canadian National	29
5	Impact of Rationalization on the Tons of Direct Shipment Statutory Grain Carried by CP Rail and Canadian National	32
6	Capacity Distribution of the Canadian National Network in the Prairie Provinces Before and After Rationalization	36
7	Distribution of Canadian National Statutory Grain Carloads by the Maximum Capacity of the Originating Lines	37
8	Capacity Distribution of the CP Rail Network in the Prairie Provinces Before and After Rationalization	39
9	Distribution of CP Rail Statutory Grain Carloads by the Maximum Capacity of the Originating Lines	40
10	1974 Impact of Rationalization on Carloads of Direct Shipment Statutory Grain Carried by CP Rail and Canadian National	43
11	Rationalized System Distribution of Carloads Carried According to Type of Line Changes	48
12	Comparison of Year 1974 Car-Related Output Units Per Car Before and After Rationalization	50

LIST OF TABLES (Cont.)

Table		Page
13	Maximum Increases in Train-Related Output Units Due to Additional Carloadings on Subdivisions with Traffic Increases	55
14	Distribution of Increased Carloads	56
15	Comparison of the Year 1974 Train Output Units Per Car Before and After Rationalization	58
16	Comparison of the Year 1974 Volume-Related Variable Costs Incurred by the CP Rail and Canadian National (Combined) in the Transportation of Direct Shipment Statutory Grain	60
17	Impact of Rationalization on Grain Dependent Lines	63
18	Percent of Total Carload Decreases that Originated on Grain Dependent Lines	65
19	Percent of Total Carload Increases that Originated on Grain Dependent Lines	66
20	Carloads Originated on Grain Dependent Lines Before and After Rationalization	67
21	Comparison of the Year 1974 Variable Costs on Grain Dependent Lines Incurred by CP Rail and Canadian National in the Transportation of Statutory Grain	72
22	Comparison of Year 1974 Variable Costs Before and After Rationalization	74
23	Disposition of Lines Remaining in the Prairie Rail Network	78
24	Percent of 1974 Direct Shipment Carloads of Statutory Grain Originated on PRA Lines	80
25	Miles of Grain Dependent Lines in PRA Network	81

LIST OF TABLES (Cont.)

Table		Page
26	Coverage of Line-Related Costs Incurred on Grain Dependent PRA Lines 1974 Rationalized System	89
27	Coverage of Volume-Related Costs on PRA Lines 1974 Rationalized System	93
28	Coverage of Total Variable Costs Incurred on PRA Lines 1974 Rationalized System	94
29	1974 Revenues Received by CP Rail and Canadian National	96
30	Summary of Reductions in 1974 Railway Revenue Due to Rationalization and PRA	100
31	Rationalized System Estimated 1974 Revenue Shortfall	102
32	Comparison of Gross Revenue Shortfall 1974 Actual vs. 1974 Rationalized	103
33	Rationalized System and PRA Estimated 1974 Revenue Shortfall	104
34	Comparison of Gross Revenue Shortfall 1974 Actual vs. 1974 on GHTC Basis	105
35	Comparison of Estimated Variable Costs Per Car Interchange Switching vs. Line-Haul Movement	118
36	1974 Direct Shipment Statutory Grain Average Loaded Haul Per Car by Destination	124
37	Comparison of CN 1974 Output Units Per Car Vancouver vs. Prince Rupert Terminations	127
38	Capacity Distribution of the CP and CN Rail Network in the Prairie Provinces After Rationalization	135

LIST OF TABLES (Cont.)

Table		Page
39	Coverage of 1974 Rail Transportation Variable Costs	151
40	Estimated Maximum Potential Increase in Subsidy Payments on Grain Dependent Lines for Year 1974	155
41	Prairie Railway Line Profiles Miles of Line Per Subdivision	163
42	Prairie Railway Line Profiles Percent of Miles with Carrying Capacity of 177,000 lbs.	164
43	Prairie Railway Line Profiles Average Load Per Car (Tons)	165
44	Prairie Railway Line Profiles Tare Weight of Cars (Tons)	166
45	Prairie Railway Line Profiles CP Rail Loaded Car-Days	167
46	Prairie Railway Line Profiles Average Diesel Units Per Train	168
47	Prairie Railway Line Profiles Average Number of Loaded and Empty Cars Per Train	169
48	Prairie Railway Line Profiles Average Train Weight	170
49	Prairie Railway Line Profiles Total Line-Related Costs Per Mile	172
50	Prairie Railway Line Profiles 1974 Line-Related Roadway Maintenance Expense Per Mile	173
51	Prairie Railway Line Profiles Percent of Actual Expenditures to Normalized Maintenance Requirement	174
52	Prairie Railway Line Profiles Total Line-Related Costs Per Statutory Grain Car Originated	175

LIST OF TABLES (Cont.)

Table		Page
53	Prairie Railway Line Profiles Volume-Related, Variable Costs Per Carload	177
54	Prairie Railway Line Profiles Operating Expenses and Depreciation Per Ton	178
55	Prairie Railway Line Profiles Average Variable Cost Per Ton	179
56	Prairie Railway Line Profiles Distribution of the Average Variable Costs Per Ton	181
57	Prairie Railway Line Profiles Variation in Variable Costs Per Ton Among Profile Category	182

REPORT SUMMARY

The following report contains a considerable amount of detailed data and descriptive methodology in order to provide the reader with the logic and details underlying the conclusions reached as a result of this phase of the Inquiry. This report summary is presented to provide the more casual reader and the technician with an overview of the report and the findings and conclusions on the matters described infra. For convenience, the summary is arranged according to the sequence of chapters in the report. The page references indicate where the summarized matter is discussed in detail.

Introduction

The report is in response to this Commission's Terms of Reference 3.5 and 3.6 which give it the mandate to develop a series of typical cost profiles for different categories of Prairie railway line (Term 3.5) and to assess the impact upon railway costs of moving grain under different grain handling and transportation assumptions (Term 3.6).

Term of Reference 3.6 is interpreted to refer to those recommendations of the Grain Handling and Transportation Commission that could impact directly on the costs

and revenue shortfall incurred by the railways in the transportation of grain moving under the statutory rates.

The two most significant such recommendations are: (1) the removal from the owning railway of 2,473 miles of line,* and (2) the assignment of an additional 2,344 miles of line to the Prairie Rail Authority.** The impact of these recommendations on railway costs is set forth in Chapters II and III and their impact on the revenue shortfall is set forth in Chapter IV. The impact of those recommendations of the Grain Handling and Transportation Commission relative to interchange, railway equipment, other railway network changes, and railway rates are presented in Chapter V. The cost profiles for typical categories of Prairie railway lines are presented in Chapter VI (pages 2-4).

The analyses conducted for this report rely on a 1974 data base. While the many changes that have occurred in the grain handling and transportation system since 1974 place some limitations on the analyses, the results identify the components of railway costs and revenues that would change as a result of the Grain Handling and Transportation Commission recommendations and delineate an order

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*The rationalization proposal (abandonments plus transfers).

**The PRA proposal.

of magnitude of the dollars involved and the relative significance of such changes (pages 4-9).

Rationalization--Cost Impact

A review of the characteristics of the 1974 output units* expended by the railways in grain transportation and the salient features of the proposed abandonment of 2,165 miles of Prairie railway line, reveals that such abandonment could not have a significant impact on the output units (pages 11-25).

The changes in the volume of grain originated at those primary elevator locations that would remain in the system after rationalization would result in a slight reduction in the number of carloads required to transport the 1974 statutory grain tonnage and a slight increase in traffic carried by CP Rail (pages 26-32).

The selection of the particular car types (i.e., box cars, railway-owned covered hopper cars and Canadian Wheat Board covered hopper cars) to transport grain in 1974 was not constrained to any significant extent by the carrying

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*Output units are the physical work units expended in the performance of railway transportation service. Some examples of output units are train miles, diesel unit-miles, train-hours, loaded and empty car-miles, and gross ton-miles.

capacity of the lines in the Prairie rail network. Rather, it was dictated by: (1) the number of government-owned hopper cars available, (2) the existence of a fleet of smaller capacity box cars that are not particularly well-suited to, or economically feasible for, the carriage of other commodities, and (3) the existence of the revenue shortfall experienced by the railways in the carriage of grain which has resulted in their disinvesting in the grain car fleet.

While rationalization per se will not change the mix of freight cars utilized in 1974, it will decrease the amount of 177,000 pound capacity rail line in the system and the number of carloads originating on those lines. This, along with the Federal Government's purchase of 6,000 additional 90-ton and 100-ton capacity hopper cars and the railways' continuing withdrawal of the smaller capacity box cars from service, will permit the increased use of the more efficient, larger cars in the future (pages 33-42).

The proposed abandonment will cause little change in the 1974 rail routes used to transport grain from the primary elevators to the statututory rate destinations (pages 44 and 45).

Implementation of the rationalization proposals of the Grain Handling and Transportation Commission would cause a decrease of three percent of less in the car-related and

train-related output units* expended by the railways in the 1974 transportation of statutory grain. Abandonment of about twice as many miles as that recommended by the Grain Handling and Transportation Commission would be necessary to effect substantial reductions in the output units expended by the railways (pages 45-59).

The miles of grain dependent lines operated by CP Rail and Canadian National in 1974 would be reduced by 23 percent and 32 percent respectively through implementation of the rationalization proposal. However, the number of carloads originated on grain dependent lines would decrease by only 2 percent for CP Rail and 11 percent for Canadian National (pages 61-68).

Full implementation of the rationalization proposal would cause an estimated reduction of $15.3 million in the 1974 variable costs incurred by CP Rail and Canadian National in the transportation of statutory grain. Of this amount, $1.3 million would result from cost reductions in

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*The car-related output units are car-days, car-miles, gross ton-miles, net ton-miles, and yard and train switching minutes. The train-related output units are train-miles, diesel unit-miles, and crew wages.

above rail operations and maintenance of running track and roadway property for other than the grain dependent lines and $14.0 million would result from reductions in the line-related ($13.8 million) and volume-related ($0.2 million) costs associated with the grain dependent lines (pages 59-60 and 68-74).

The above cited cost reductions give no consideration to the operating and capital expenditures that will be required to rehabilitate and upgrade the Prairie rail branch lines to an acceptable operating standard. This Commission is not able to provide any more definitive estimates of the total expenditures required to upgrade and rehabilitate the branch line network that existed in 1974 or the reduction in such expenditures that would result from rationalization that was the Grain Handling and Transportation Commission. However, in my opinion, there can be no doubt that it would be considerable (page 75-76).

Freight Rail Authority--Cost Impacts

The 2,344 miles of Prairie rail line to be assigned to the proposed Prairie Railway Authority (PRA) are predominately grain dependent lines and constitute 15 percent of the total CP Rail and Canadian National rail mileage in the Prairie Provinces after abandonment. Approximately 18

percent of the 1974 grain carloads were originated at elevators that would be located on PRA lines. These lines do not form a contiguous rail network and present little opportunity for cost reducing, operational changes (pages 77-82).

Unlike abandonment, the formation of PRA per se will not cause any reductions in the costs incurred by the railways. Rather, it will merely shift the responsibility for coverage of those costs to PRA. My interpretation of the proposed contracts between the railways and PRA for provision of rail services on the PRA lines, indicates that PRA would cover $8.3 million or 47 percent of the total 1974 variable costs the railways would have incurred in the transportation of statutory grain on the PRA lines (pages 82-94).

Rationalization and PRA--
Revenue and Revenue Shortfall Impacts

Implementation of the Grain Handling and Transportation Commission's rationalization and Prairie Rail Authority proposals would cause a reduction of approximately $0.3 million in the 1974 freight rate and miscellaneous revenue received by the railways and a reduction of about $10.1 million in payments under the present branch line subsidy program (pages 93-100).

This Commission previously found that CP Rail and Canadian National incurred a combined gross revenue shortfall* of $139.1 million from the transportation of statutory grain in 1974. Full implementation of the Grain Handling and Transportation Commission's rationalization proposal would reduce this shortfall by $15.3 million or 11 percent. Implementation of the PRA proposal would cause a further reduction of $8.1 million in this shortfall by shifting the coverage of certain costs to PRA (pages 99-105).

Giving consideration to the inflation in wage and price levels that has incurred since 1974, it is estimated that the railways will incur a gross revenue shortfall of approximately $180.0 million in 1977. Implementation of the rationalization proposal would reduce this shortfall by approximately $18.0 to $20.0 million and implementation of both the rationalization and Prairie Rail Authority proposals woulld reduce it by another $9.0 to $11.0 million through the transfer of the responsibility for coverage of certain cost items to PRA (pages 105-107).

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*Gross revenue shortfall is defined as the excess of costs over revenues before receipt of branch line subsidy payments.

Other GHTC Recommendations

Railway cars in grain transportation service spend about 13 percent of their time in the actual over-the-road movement and the balance at origin elevators, destination terminals, and various railway yards enroute. Hence, decreases in route-of-movement miles will not have a significant impact on car-days or the number of cars required to move a given tonnage of grain. Reductions in car-miles will have a more pronounced effect on future railway costs than will reductions in car-days (pages 109-113).

Traditionally, open interchanges have not been used in North America to improve the overall efficiency of a multi-railway network. There is no question that the selective interchange of cars could reduce the total car-miles required to transport a fixed number of carloads from the primary elevators to the export terminals. The cost savings associated with the reduction in car-miles would be offset, to some extent, by increased switching and car-day costs at the interchange points. Dependent upon the conditions surrounding the switching activity, interchange could produce a savings of about $8.40 per car for every 100 mile reduction in the average loaded haul per car. In evaluating the benefits of open interchange, consideration must also be given to the probability of the incurrence of

problems of coordination and communication not found in single line service. Despite the apparent economic and operational success of the Edmonton/Calgary interchange, I conclude that the general establishment of open interchange points does not present an opportunity for substantial reductions in railway costs (pages 113-120).

The recommended open interchange for shipments to the Port of Churchill would have an insignificant impact on the costs and efficiency of the rail transportation service. The annual cost savings that could result--estimated at $156 thousand--could probably be achieved through a concerted effort to originate Churchill grain on the Canadian National lines which are proximate to Churchill. The principal justification for the establishment of an open interchange to Churchill must lie with the increased flexibility that it would provide to the Canadian Wheat Board (pages 121-126).

The recommended open interchange for Prince Rupert could be accomplished with some modification to the existing Edmonton/Calgary interchange agreement. So long as the Edmonton/Calgary interchange is operative, the routing of cars originating on CP Rail lines to Prince Rupert, rather than Vancouver, would cause an increase in railway costs. The GHTC recommendations for enlargement,

modernization, and complete integration of Prince Rupert in the export terminal network could reduce or eliminate the extant cost disadvantages (page 126-130).

The recommendation for interchangeability and elimination of the exclusive assignment of government hopper cars, effectively suggests a pool car arrangement under the control of the Canadian Wheat Board. Such arrangement could reduce the costs incurred by the railways and/or the Federal Government if: (1) the Federal Government becomes the sole or principal supplier of cars for the grain trade, (2) there is widespread interchange of these cars among the railways, and/or (3) there is a substantial imbalance in the timing or location of grain car loadings. Until such time as these conditions exist, the pooling of the government hopper cars would not produce any substantial reduction in the costs of railway transportation (pages 131-133).

The miles of light carrying capacity lines in the Prairie rail network and the number of carloads originating on such lines should decline substantially by 1985 due to rationalization and upgrading. The objective of acquisition of cars for use or assignment to the grain trade should be to replace the aging and obsolete box car fleet with 90-ton and 100-ton hopper cars. This objective should be pursued until such time as there are sufficient cars of

this capacity to serve all primary elevator locations on lines capable of handling such cars (pages 133-137).

The installation of roof hatches on box cars appears to provide a greater potential for net cost reductions than does the installation of end unload gates (pages 137-138).

If the recommended research and studies of electrification of certain rail lines proves them to be economically feasible, there could be some reduction in the costs of transporting grain. The abandonment of certain parallel lines and the use of trackage rights would not change the costs attributed to grain by this Commission (page 139).

The construction of the Clinton Ashcroft link could impact upon the costs incurred by the railways dependent upon the use made of the route and the extent to which Squamish became a viable port of export for grain (pages 140-141).

The elimination of stop-off charges and the incorporation of the costs associated with the stop-off into the cost of transporting statutory grain would increase the revenue shortfall incurred by the railways in 1974 (pages 144-145).

The Grain Handling and Transportation Commission's recommendation on the statutory rate can be interpreted to mean retention of only the statutory nature of the rate or retention of both the statutory nature and the present level of the rate. Retention of the present rate level will result in the railways incurring an ever increasing gross revenue shortfall due to inflation. The recommendation that the statutory rate level be extended to other commodities would result in an increase in the gross revenue shortfall of approximately $1.31 per $1.00 of revenue received (pages 145-149).

These recommendations and the recommendation that the Federal Government pay a subsidy reflecting the difference between the costs of providing the service and the revenues received from the statutory rates will result in ever increasing Federal Government subsidy payments for the transportation of statutory grain. Under these recommendations, the Federal Government's financial participation in grain transportation would have approximated 60 percent of the costs incurred by the railways in 1974. Further, the Federal Government will become the only participant in the railway component of the grain handling and transportation system that will have a direct financial interest in, or derive financial benefits from, increased efficiency in railway operations (pages 149-151).

The Grain Handling and Transportation Commission and this Commission have demonstrated that the gross revenue shortfall incurred by the railways is caused by both "branchness" and "grainess". While, in Western Canada, these two problems have become inextricably bound together, they are, in fact, different and should be dealt with separately (pages 151-154).

Resolution of all outstanding issues between the railways and the Canadian Transport Commission, relative to the branch line subsidy claims in favor of the railways, could result in an estimated increase of approximately $20.0 million in 1974 branch line subsidy payments to the railways (pages 154-155).

The existing rate structure applicable to export grain is virtually devoid of monetary incentives for efficient use and monetary penalties for inefficient use of the railway transportation resource. While I am unqualified to evaluate most of the ramifications of the Grain Handling and Transportation Commission's rate proposals, I believe their implementation will result in a continuance of the insignificant influence of financial considerations on the efficient use and operation of the railway system for the carriage of statutory grain (pages 155-157).

The Prairie railway line profiles identify the line-related costs as the most significant variable cost component and the compenent most sensitive to changes in density. The volume-related costs are not nearly as significant or as sensitive to density changes. These conclusions lead to a more generalized conclusion that the historical costs of providing service on individual lines or line categories should not be afforded substantial weight in the rationalization process (pages 159-183).

CHAPTER I

INTRODUCTION

The inquiry of the Commission on the Costs of Transporting Grain by Rail* resulted in a finding that the railways (CPR, CNR, and NAR) incurred a gross revenue shortfall (i.e., before receipt of subsidy payments) of $141.3 million in 1974.**

Subsequent to the submission of this Commission's Report Volume I, the Grain Handling and Transportation Commission*** submitted a three-volume report which, among other things, set forth a series of recommendations for changes to the grain handling and transportation system. This Commission's Term of Reference 3.6 provides that it shall:

> . . .assess the impact upon railway costs of moving grain under a series of different grain handling and transportation assumptions.

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*The Commission on the Costs of Transporting Grain by Rail is referred to hereinafter as "this Commission" or CCTGR.

**Commission on the Costs of Transporting Grain by Rail, Report Volume I, p. 214 and Appendix P.

***The Grain Handling and Transportation Commission is referred to hereinafter as GHTC.

This mandate is interpreted to require this Commission to analyze and evaluate the various recommendations of the GHTC that could or would impact upon the costs incurred and revenues received by the railways from the transportation of statutory grain.

REPORT OUTLINE

The two most significant recommendations of the GHTC in terms of potential impact on the costs incurred by the railways are:

- the removal from the owning railway of some 2,473 miles of line through abandonment or transfer;* and

- the assignment of some 2,344 miles of line remaining in the railway system to a new Federal Government agency to be called the Prairie Rail Authority.**

Chapters II and III of this report set forth the changes in railway costs that would result from implementation

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*This recommendation is referred to hereinafter as the rationalization proposal.

**This recommendation is referred to hereinafter as the PRA proposal.

of these two proposals. Chapter IV explores the impact that such implementation would have on the railway's revenue shortfall from statutory grain transportation.

The GHTC also presented several other recommendations which, if implemented, could cause changes to railway costs and revenues. These recommendations which cover railway operations, railway equipment, and railway rates are evaluated in Chapter V.

Term of Reference 3.5 directs this Commission:

> To develop a series of typical cost profiles for different categories of Prairie railway line used for transporting grain. These profiles to be sufficiently detailed, such that, interested parties will be able to derive the order of magnitude of grain transportation costs for typical categories of line.

These cost profiles are presented in Chapter VI.

CONDUCT OF THE INQUIRY

This Commission's Costing Inquiry was conducted in an open forum wherein all parties of interest had an opportunity to be heard and to submit statements for the Commission's consideration.* In my judgment, the subjects of

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*CCTGR, Op. Cit., p. 9.

this phase of the inquiry did not lend themselves readily to the "open forum" procedure and the timely submission of this report excluded the possibility of full public participation. The analyses described herein were undertaken by me personally and the conclusions drawn therefrom reflect my evaluation of the subject matter. In essence, this report is a reflection of one person's opinion, judgment, and research and must be viewed in that light.

RESEARCH OBJECTIVE AND LIMITATIONS

The objective of the analyses described infra was to determine the relative impact that implementation of the GHTC recommendations would have on the railways' identified revenue shortfall.

As a result of its earlier efforts, this Commission has a detailed data base of operating characteristics which reflects the output and work units incurred by the railways in statutory grain transportation during year 1974. However, like most recurring transportation service, the carriage of statutory grain by rail is conducted in a dynamic environment. Changes occur in the operating patterns of the railways from month to month and year to year because of such diverse factors as the demand for export grain, weather conditions, decisions of the Canadian Wheat Board, decisions of the Canadian Transport

Commission, and operating and service decisions of the railways.

Since 1974, the grain handling and distribution system, and the rail component thereof, probably has experienced more changes than it did in the 10 or 20 years prior to 1974. Examples of some of the more significant changes are:

- the transportation of grain to Victoria under the statutory rates has been discontinued;
- the Calgary/Edmonton interchange has been implemented;
- all Category C lines have been abandoned and other lines or portions thereof have ceased operation because of physical disabilities and/or elevator closures;
- a significant number of elevators that originated statutory grain in 1974 have been closed;
- the Federal Government car fleet has increased from the 2,000 covered hopper cars that were in service in 1974 to the 8,000 such cars that are in service today;

- Canadian National has retired a substantial number of their small capacity box cars which were used in 1974; and

- while the freight rate per hundredweight on statutory grain has not changed since 1974, the costs of providing the transportation service have undoubtedly increased due to inflation.

While these changes are most likely laudable from the standpoint of progress and efficiency, they are unfortunate from the standpoint of impact analysis. Ideally, this phase of the inquiry would be constructed on a traffic and operating characteristics data base which reflects extant transportation conditions. As such a data base is costly and requires considerable time to prepare, I concluded that its development was not feasible if this report was to be timely. The quantification of all the changes that have occurred since 1974 and the adjustment of the 1974 data base to reflect those changes is an undertaking of such proportion that it could not be completed with the resources available to this Commission.

Indeed, the number of potential changes that the GHTC proposals alone could effect on the rail transportation service provided to statutory grain in 1974 are almost infinite. These changes could be brought about by the Canadian

Wheat Board, as well as the railways themselves. For example, if the rationalized system had been operative in 1974, the Canadian Wheat Board may have changed the timing and/or the volume of cars ordered from particular blocks. Indeed, even the boundaries of some of the blocks may have been changed. This, in turn, may have resulted in changes in the statutory rate destinations of grain shipped from particular stations and/or subdivisions.

The railways could affect an even greater number of changes including, but not limited to, changes in the relative use of the various generic car types used to carry the grain (i.e., box cars, railway hopper cars, government hopper cars); changes in routing; consolidation of two or more train runs because of reduced mileage; number of stations to be served and/or carloads to be originated; and changes in the frequency of train service.

To identify and quantify the impact of all of the potential changes requires a detailed microanalysis of the 1974 day-to-day operations on each subdivision in the rail system. Such an analysis would require detailed inputs from various departments of the railways, the Canadian

Wheat Board, the elevator companies, and the producers.* Accomplishment of this level of microanalysis also was not feasible within the constraints faced by this Commission.

Of necessity, the analyses conducted to meet the study objectives assumed a static transportation environment. The measurement of the impact of the GHTC proposals is predicated upon a comparison of the rail transportation service actually provided statutory grain in 1974 with that which could have been provided if the GHTC recommendations had been fully implemented in 1974. As such, the measurement gives consideration to only those changes in the rail transportation service that stem directly from implementation of the GHTC recommendations. That is, no consideration is given to those changes which were made (or which could be made) to the 1974 rail network or rail transportation service independent of the GHTC recommendations or

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*For purposes of the analysis of the impact of the rationalization proposal, the GHTC estimated the stations to which the producer would move his grain if the system was rationalized as proposed. Obviously, the producers' actual response to rationalization would be governed by many factors and could be influenced by the response of the Wheat Board and the railways to the changed structure of the system. Similarly, the elevator companies could make changes to the existing car and storage capacity of those elevators located on the lines remaining in the system. These changes, in turn, could impact on the Canadian Wheat Board, the railways, and the producers.

to those changes that would result from the response of others (e.g., producers, elevator and terminal companies) to the GHTC recommendations.

For all of the reasons presented above, it is clear that the analyses described herein do not and cannot produce an estimate of the absolute dollar change in the railway's revenue shortfall that would result from implementation of the GHTC recommendations. Despite this limitation, it is my opinion that these analyses do identify the components of railway costs and revenues that would change as a result of the GHTC recommendations and delineate an order of magnitude of the dollars involved and the relative significance of such changes.

CHAPTER II

RATIONALIZATION--COST IMPACT

This chapter presents the results of an analysis of the impact that the GHTC rationalization proposal would have on the 1974 costs incurred and revenues received by the railways for the transportation of statutory grain.

BACKGROUND

The Grain Handling and Transportation Commission's rationalization proposal involved a review and analysis of 6,299.3* miles of Category B Lines, 93.4 miles of Category A Lines,** and the construction of 22.4 miles of new trackage.*** The recommended disposition of this mileage is shown on the following page.

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*Grain Handling and Transportation Commission Report Volume I, p. 503, Table XII-1.

**Ibid., p. 510; the Meadow Lake Subdivision of CP Rail.

***Ibid., p. 503.

TABLE 1

Summary of GHTC Rationalization Recommendations

Item	CP Rail	Canadian National	NAR	Total
Rail Miles Evaluated				
Category B Miles -	2,344	3,871	85	6,300
Category A Miles -	93	0	0	93
Total Evaluated	2,437	3,871	85	6,393
Rail Miles Removed from Original Owner				
Abandonment	858	1,307	0	2,165
Transfer to Other Railway	215	93	0	308
Total Removed	1,073	1,400	0	2,473
Rail Miles Remaining in System				
Retained	1,364	2,471	85	3,920
Transferred from Other Railway	93	215	0	308
New Construction	14	8	0	22
Total Remaining	1,471	2,694	85	4,250

Source: Derived from GHTC Report Volume I, Chapter 11.

Appendix A summarizes this Commission's findings as to the costs incurred by the railways* in the year 1974 transportation of statutory grain. This appendix displays the magnitude of the dollars involved for those cost elements that could be impacted by the GHTC recommendations.

*The costs shown for Canadian National throughout this report are based on a capital funds rate of 11.31 percent which this Commission found to be appropriate for Canadian National in 1974 under certain implied conditions. (CCTGR Report Volume 1, pp. 101 and 102.)

It reveals that over 70 percent of the total variable costs incurred in 1974 by CP Rail and Canadian National consisted of the volume-related costs associated with train operations ($66.0 million), and freight car operations ($48.8 million), and the line-related costs associated with the grain dependent lines ($52.5 million). Each of these cost elements could be affected by the GHTC rationalization proposal.

The line-related costs incurred on the grain dependent lines--which constitute 23 percent of the total variable costs--definitely would be reduced by implementation of the rationalization proposal which calls for abandonment of some of these lines.

The output units of the two most significant volume-related cost elements--train operations (29 percent of the total variable costs) and car operations (21 percent of the total variable costs)--could be impacted by the GHTC rationalization proposal. The output units associated with freight car operations costs could be affected by changes in the origin locations, routes,* and car types utilized. The output units associated with train operations costs

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*Routing changes also could affect the output units associated with yard tracks and roadway property, and yard operations costs.

could be affected by routing changes, the elimination of train operations on the lines to be abandoned, and increases in traffic volume on the lines remaining in the system.

IMPACT ON VOLUME-RELATED COSTS

Chapter IV of this Commission's Report Volume I contains a discussion of each of the many issues presented in the course of its inquiry into the costs of transporting statutory grain by rail. Our evaluation and resolution of these issues resulted in the development of unit costs which we found to be reasonable estimates of the cost incurred per physical work unit expended by CP Rail and Canadian National. These unit costs were multiplied by the total output units incurred by each railway* to compute the total variable costs attributable to the transportation of statutory grain in year 1974.**

The total volume-related variable costs of transporting a commodity are a function of both the unit costs and the output units incurred in the provision of the

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*There was virtually no dispute among the parties to this Commission's Inquiry as to the reasonableness of the railways' estimates of the total output units actually incurred in 1974. (See CCTGR Report Volume I, pp. 19-24.)

**The total variable costs are shown in CCTGR Report Volume I, Appendices K, L, M, and N.

transportation service. As a prelude to this analysis, I carefully reviewed this Commission's determination of the appropriate unit costs for each railway and concluded therefrom that they would be reliable estimates of the costs incurred per physical work unit expended by CP Rail and Canadian National for the transportation of statutory grain on the rationalized prairie rail network (i.e., the network that would remain after abandonment of the 2,165 miles of Category B Line and the transfer of 308 miles of Category A and Category B Lines between Canadian National and CP Rail as recommended by the GHTC).*

This conclusion requires that any change in the volume-related costs resulting from rationalization must stem from changes in the output units expended in the performance of the grain transportation service.

The physical work or output units incurred by the railways in the transportation of statutory grain,** or for that matter any commodity, basically can be divided into those directly related to the rail cars used in the

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*Use of the term "rationalized system" has been adopted, at some points, to refer to the rationalized Prairie rail network.

**See this Commission's Report Volume I, pp. 19-24 and Appendix E for discussion and identification of the output units actually incurred in the transportation of direct shipment statutory grain in the year 1974.

transportation service and those directly related to the trains which haul the loaded and empty cars. The car-related output units for a particular movement can be ascertained directly and include such work elements as carloads carried, carloads billed, car-miles, car-days, yard and train switching minutes per car, gross ton-miles, net ton-miles, and carloads requiring grain doors. The total train-related output units for each train that would handle carloads of a particular traffic also can be ascertained directly. However, they must be divided among, or prorated to, each of the cars carried on the train to develop the train output units attributable to such traffic.* The train-related output units include such work elements as train-miles, train-hours, crew wages, gallons of fuel consumed, and diesel unit-miles. These two groups of output units, as developed by this Commission for its cost estimations presented in Volume I are summarized in Appendix B.

The basic approach to the assessment of the impact of rationalization was to adjust the year 1974 output data base to reflect the changes in work units that would logically flow from implementation of the rationalization

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*See this Commission's Report Volume I, pp. 57-59 for a discussion of the validity of the methods used by the railways to associate train output units with particular cars or traffic categories.

proposal. The resultant increases and/or decreases in work units were then multiplied by the appropriate 1974 volume-related unit costs to develop the volume-related variable cost increases or decreases.

1974 Grain Transportation Output Unit Characteristics

The extent to which rationalization of the prairie branch line network would impact on the work units or output units expended by the railways in grain transportation is dictated, to a considerable degree, by the structure of the grain transportation network. As the transportation service generally consists of a series of converging movements of individual grain carloads, the system can be simply described by classifying the rail lines and the assembly/distribution* yards as follows:

- Primary Yard: An assembly/distribution yard located on the principal through route to a statutory rate destination. Examples of primary yards are: Calgary, Moose Jaw, Winnipeg.

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*The term assembly/distribution refers to the assembly of loaded cars from one or more stations and/or one or more subdivisions into groups or lots for futherance toward the destination. And, the separation of inbound groups of empty cars, from points closer to the destination, into smaller numbers for distribution back to the primary elevators for reloading.

- Secondary Yard: An assembly/distribution yard which is not located on the principal through route and which forwards cars to primary assembly/distribution yards.

- Primary Line: A gathering line that connects directly to a primary assembly/distribution yard.

- Secondary Line: A gathering line that connects to a secondary assembly/distribution yard.

The secondary lines generally are at the periphery of the system. The grain carloads originated thereon are first transported over one, or more, secondary lines to a secondary yard where they are consolidated with carloads originated on other secondary lines and with carloads originated within the switching limits of the secondary yard.

The carloads assembled at the secondary yard are then forwarded to a primary yard where they are consolidated with carloads originated on the primary lines and with carloads originated within the switching limits of the primary yard. The third and final movement is from the primary yards to the statutory rate destinations.

A review of the GHTC overall maps of the prairie rail network before and after rationalization and the individual regional maps* reveal several significant features of the rationalization proposal. They are:

- The lines to be abandoned generally are lines which have parallel counterparts that are to be retained.

- The lines to be abandoned have no distinct pattern in terms of distance from primary assembly/distribution yards. That is, there appear to be just about as many miles of line to be abandoned on the periphery of the system as there are miles of line to be abandoned close to the primary yards.

- The lines between the secondary and primary assembly/distribution yards are virtually untouched by the rationalization proposal.

- The traffic originating on the lines to be abandoned generally has to move over only a single subdivision before it reaches a primary or secondary assembly/distribution yard.

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*Op. cit., Chapter 11 and Maps #1 and #2.

In, 1974 the railways originated 326,535 direct shipment statutory grain carloads* of which 38 percent originated by CP Rail, 35 percent originated by CN, and 100 percent originated by NAR were at elevators located on subdivisions that would experience no changes because of rationalization. That is, implementation of the rationalization proposal could not cause a change in the output units incurred for nearly 40 percent of the direct shipment traffic. These percentages are summarized in Table 2.

TABLE 2

1974 Direct Shipment Carloads Originating on Subdivisions That Would Not be Affected by Rationalization

Railway	Total 1974 Direct Shipment Carloads Originated	Total Direct Shipment Carloads Originated on Subdivisions Not Affected by Rationalization	Percent of Traffic Not Affected By Rationalization
CP Rail	156,192	59,253	37.9%
Canadian National	159,905	55,681	34.8
NAR	10,438	10,438	100.0
TOTAL	326,535	125,372	38.4%

Source: Derived from page 1 of Apendices C and D hereto and the rationalization proposal.

* Direct shipment statutory grain is defined as grain transported under the statutory rates which moves directly from the origin elevator to the statutory rate destination without stopping-in-transit for milling, storage, or cleaning. The direct shipment grain accounted for 97 percent of the total grain that was transported under the statutory rates in 1974.

These features of the rationalized system lead to the a priori conclusion that the principal effect of the proposed rationalization would be on the output units incurred during the initial movement, i.e., the movement from the origin elevator to the first assembly/distribution yard. As a result, the impact of the rationalization on the output units expended by the railways will be largely confined to "trade-offs" between the initial haul on the lines to be abandoned and the initial haul on the retained lines which would experience traffic increases.*

An indication of the potential for changes to the output units is found in a comparison of the 1974 output units associated with the initial movement and those related to the total movement, and a comparison of the 1974 output units incurred on the lines to be abandoned and those incurred on the retained lines which would experience traffic increases.

As displayed in Table 3, the loaded car-miles for the initial movement comprise less than 10 percent of the loaded car-miles for the total movement on both the subdivisions to be abandoned and the subdivisions that will experience increased traffic. The train-related output units

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*These lines are identified at pp. 2 and 3 of Appendices C and D.

(train-miles and diesel unit-miles) per car incurred on the initial movement are more significant relative to the total

TABLE 3

Comparison of Selected Loaded Movement Output Units Per Car
Initial Haul vs. Total Haul

Item	Output Units Per Car		
	Loaded Car-Miles	Diesel Unit-Miles	Train-Miles
CP Rail			
Sub-Divisions with Traffic Increases			
Initial Haul	64.1	3.9	2.3
Total Haul	802.5	31.7	10.8
Initial Haul as a Percent of the Total Haul	8.0%	12.3%	21.3%
Sub-Divisions to be Abandoned or Transferred			
Initial Haul	65.6	4.8	3.6
Total Haul	849.4	33.2	12.6
Initial Haul as a Percent of the Total Haul	7.7%	14.5%	28.6%
Canadian National			
Sub-Divisions with Traffic Increases			
Initial Haul	51.5	4.0	2.0
Total Haul	961.5	30.9	14.0
Initial Haul as a Percent of the Total Haul	5.4%	12.9%	14.3%
Sub-Divisions to be Abandoned or Transferred			
Initial Haul	55.0	4.3	2.0
Total Haul	893.2	28.1	12.8
Initial Haul as a Percent of the Total Haul	6.2%	15.3%	15.6%

Source: CCTGR 1974 data base.

movement than are the car-miles. This, of course, is caused by the relatively small number of cars per train on the gathering trains.

Additional characteristics of the system, as it was operated in 1974, are revealed by Appendix E which compares the characteristics of the average car-related and train-related output units incurred by CP Rail and Canadian National in the transportation of direct shipment statutory grain.

The more significant features of the 1974 direct shipment statutory grain operations of the two railways revealed by Appendix E are as follows:

- Canadian National utilized box cars to a greater extent in 1974 than did CP Rail (92 percent versus 86 percent).

- Both railways required an average of approximately 23 car-days to accomplish the delivery of a carload of grain and the return of the empty car for reloading, i.e., on average, one car could deliver a maximum of 15 to 16 carloads of statutory grain per year.

- The average loaded and total length of hauls on Canadian National were about five percent greater than they were on CP Rail.

- Canadian National achieved slightly better utilization of its cars in terms of miles travelled per day than did CP Rail (72.5 miles versus 68.2 miles).

- Canadian National had a lower average load per car than did CP Rail (57.8 tons versus 65.2 tons). Assuming that most cars are loaded to capacity, this indicates that Canadian National used the smaller capacity cars to a significantly greater extent than did CP Rail.

- If Canadian National could have achieved the same average load as CP Rail, the number of carloads required to move the 9,603,906 tons carried by CN would have been reduced by approximately 11 percent (147,299 versus 166,104).

- The weighted average tare weight (i.e., the weight of the car itself) of the cars employed by both railways are equal. Thus, the car mix of CP Rail is more efficient than that of Canadian National in terms of payload weight

to car weight (65.2 tons to 22.9 tons versus 57.8 tons to 22.9 tons).

- Canadian National required about 12 percent more switching minutes to transport an average carload of grain than did CP Rail.

- Canadian National expended slightly more diesel unit-miles per thousand gross ton-miles than did CP Rail (0.57 versus 0.55).

When all of the charcteristics of the grain transportation system are considered, it becomes clear that implementation of the GHTC rationalization proposal could not have a significant impact on the total output units expended in the transportation of statutory grain in 1974.

1974 Output Units--Rationalized System

The determination of the impact that the GHTC rationalization proposal would have on the 1974 output units incurred by the railways in the transportation of statutory grain gave consideration to the following four major changes that could logically flow from implementation of that proposal:

- changes in origin locations and volumes;
- changes in car types utilized;
- changes in routing; and

- changes in train activity on the lines to be retained.

Origin Locations and Volumes

As the rationalization of the Prairie rail network, per se, would not cause a change in the 1974 destination pattern of statutory grain, it was assumed that there would be no change in the number of tons terminated at each of the six destination points.* Given this assumption, the first step in the analysis was to determine the impact of the rationalization proposal on the number of carloads and tons of direct shipment statutory grain originated (or received in interchange from the NAR)** by each railway in 1974. The GHTC furnished a list of all stations that would be abandoned under the rationalization proposal and a statement showing the percent of the total grain originating at those stations that would be transferred to another station remaining in the rationalized system. The distribution percentages were applied to the 1974 station-by-station car-load

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*See CCTGR Report Volume I, Appendix D for the number of carloads and tons of direct shipment and MIT statutory grain terminated at each destination.

**In 1974, the NAR originated 10,438 carloads of direct shipment statutory grain which were interchanged to CP Rail (4,239 carloads) and to Canadian National (6,199 carloads) for furtherance to the final destination.

and tonnage data* for the stations to be abandoned to develop the additional carloads and tons that would have originated at each of the stations remaining in the rationalized system.

The process of reassigning the grain carloads from stations to be abandoned under the rationalization proposal to stations remaining in the system involved three distinct types of transfers:

- transfers from a station on either CP or CN to a station on the same railway;
- transfers from a station on CP to a station on CN and vice versa; and
- transfers of subdivisions or parts thereof from CP to CN and vice versa.

For the cars and tons involved in the first type of transfer, it was assumed that there would be no change in the car types utilized or the average load per car. However, the difference in the average load per car between

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*These data were furnished to this Commission by CP Rail and Canadian National as part of the data base for the 1974 cost studies and are summarized on a subdivision basis in Exhibits SC-1 through SC-6 of the record of the public hearings of this Commission. The 1974 subdivision data is shown also in Appendices C and D hereto.

the two railways required further consideration in developing the impact of the second and third types of transfers. In total, CP Rail would transfer 523,406 tons to Canadian National and Canadian National would transfer 596,632 tons to CP Rail--a net transfer to CP Rail of 73,226 tons. As shown on Table 4 (following page), the tons transferred from CP Rail to Canadian National accounted for 8,554 CP Rail carloads in 1974 at an average load of 61.2 tons per car. And, the tons transferred from Canadian National to CP Rail accounted for 10,647 Canadian National carloads in 1974 at an average load of 56.0 tons per car.

After careful consideration of the factors influencing the selection of the car type used to transport statutory grain (these factors are discussed in the next section of this chapter), it was judged that Canadian National could absorb the tonnage transferred from CP Rail at the CP Rail average loading of 61.2 tons per car. It also was judged that, on average, the total tonnage transferred from CN could be carried in CP Rail box cars at CP Rail's 1974 average load per box car of 61.7* tons. Thus, the 596,632

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*This is the system average load for grain in CP Rail box cars and should not be confused with the average loading of cars transferred from CP Rail (61.2) which reflects a greater incidence of smaller loadings, or with the average loading of all types of CP Rail cars carrying statutory grain (65.2)--box and hopper cars.

TABLE 4

Comparison of Average Load Per Car for
Tons Transferred Between CP Rail and Canadian National

Item	1974		Average Load Per Car
	Tons	Carloads	
Tons Transferred From CP To CN			
From Stations on CP to Stations on CN	204,951	3,376	60.7
On Subdivisions Transferred from CP to CN	318,455	5,178	61.5
TOTAL	523,406	8,554	61.2
Tons Transferred from CN to CP			
From Stations on CN to Stations on CP	269,911	4,845	55.7
On Subdivisions transferred from CN to CP	326,721	5,802	56.3
TOTAL	596,632	10,647	56.0

Source: CCTGR 1974 data base.

tons transferred from Canadian National would be carried in 9,670 carloads on CP Rail (596,632 ÷ 61.7) rather than the 10,647 carloads required to handle this same tonnage on Canadian National in 1974. In essence, it is my judgment that the rationalization proposal would reduce the carloadings required to handle the 1974 direct shipment statutory grain traffic by 977 carloads.

Because Canadian National served four statutory rate destinations exclusively in 1974,* it was necessary to adjust the distribution of the grain originated on some of the lines in order to maintain the same number of tons at each statutory rate destination point. For example, all of the grain on a Canadian National line that actually moved to Churchill, Armstrong, and/or Thunder Bay in 1974 was assumed to move to Thunder Bay if the line was transferred to CP Rail. To offset this reduction in carloads and tons to Armstrong and Churchill, I arbitrarily:

- increased the carloads and tons to Armstrong and Churchill and decreased the number of carloads and tons to Thunder Bay on the Canadian National line(s) closest to the transferred line, or

- assumed some of the tons and carloads destined to Thunder Bay that originated on a CP Rail line transferred to Canadian National would move to Armstrong or Churchill under the rationalization proposal.

A similar process was used for shipments destined to Prince Rupert, Victoria, and Vancouver. This treatment resulted in

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*The four exclusive destinations were Churchill, Armstrong, Prince Rupert, and Victoria.

the total shift in carloads and tons between Canadian National and CP Rail being confined to Thunder Bay and Vancouver destinations.

The results of the reassignment of traffic are detailed by origin subdivision in Appendices C and D and are summarized in Table 5. As a result of rationalization, CP Rail's traffic would increase by less than one percent over the 10,460,373 total tons handled in 1974 and their share of the total tonnage carried by both railways would increase by 0.4 of one percentage point. The rationalization proposal also would produce a very slight change in the relative distribution of traffic between statutory rate destinations on each railway. However, all things considered, the rationalization proposal, per se, would have little impact on the distribution of traffic between the two railways or among the statutory rate destinations served by each railway.

TABLE 5

Impact of Rationalization on the Tons of Direct Shipment Statutory Grain Carried By CP Rail and Canadian National

Railway/Statutory Rate Destination	Tons Carried				Percent Change
	1974 Actual		1974 After Rationalization		
	Amount (000)	Percentage Distribution	Amount (000)	Percentage Distribution	
CP Rail					
Thunder Bay	7,159.3	68.4%	7,212.7	68.5%	+0.75%
Vancouver	3,301.1	31.6	3,320.9	31.5	+0.60
TOTAL	10,460.4	100.0%	10,533.6	100.0%	+0.70%
Canadian National					
Armstrong & East	101.7	1.0%	101.7	1.0%	0.00%
Churchill	564.2	5.9	564.2	5.9	0.00
Thunder Bay	5,739.7	59.8	5,686.3	59.7	-0.93
Prince Rupert	758.6	7.9	758.6	8.0	0.00
Victoria	260.4	2.7	260.4	2.7	0.00
Vancouver	2,179.3	22.7	2,159.5	22.7	-0.90
TOTAL	9,603.9	100.0	9,530.7	100.0	-0.76%
Market Share					
CP Rail	52.1%	xxx	52.5%	xxx	+0.77%
Canadian National	47.9%	xxx	47.5%	xxx	-0.84%

Source: CCTGR 1974 data base.

Car Types

The particular mix of the types of cars used to carry the statutory grain (i.e., box cars, railway-owned hopper cars, and Canadian Wheat Board hopper cars) in any given year has some impact on the costs incurred by the railways. The most obvious example is the use of the Canadian Wheat Board hopper cars which, by shifting the capital costs from the railways to the Federal Government, decreases the total costs incurred by the railways. Due to differences in the weight of the cars themselves, their carrying capacity, and the restrictions placed on the use of the Canadian Wheat Board cars, the relative mix of car types utilized will have some effect on the total car-miles and car-days, the gross ton-miles, the number of carloads, and the number of grain doors associated with the rail transportation of a fixed amount of statutory grain tonnage.

The particular mix of car types employed in the transportation of statutory grain for any given period is the result of numerous factors and decisions--the two most important are the availability of the cars and the carrying capacity of the lines to be served.

The availability of cars within each particular generic car type is dictated by a number of factors, including:

- the number of cars in inventory;

- the suitability of the cars for carrying traffic other than grain; and

- the demand made on the car supply by grain and, where applicable, by other commodities.

Rationalization, per se, would have no impact on these factors. However, rationalization could have a significant impact on the carrying capacity of the individual lines which originated grain traffic. Generally, the use of Canadian Wheat Board and some railway-owned hopper cars is limited to lines which have a maximum gross weight capacity of 220,000 pounds or more.

The report of the GHTC indicates that in 1974 only 132.6 miles of CP Rail's system in the Prairie Provinces had a carrying capacity of less than 220,000 pounds. On the other hand, the Canadian National operated 3,370.9 miles (or about 36 percent of their system total in the Prairie Provinces) of lines that had a maximum carrying capacity of 177,000 pounds.* These lines required the use of the small box cars and, in part, were responsible

*Op. Cit., p. 315, Table X-2. Lines with a maximum carrying capacity of 177,000 lbs. are sometimes referred to herein as light capacity lines.

for Canadian National experiencing a significantly lower average load per car than CP Rail.*

It is clear that the carrying capacity of the Canadian National lines could, and probably did, influence their historical acquisition of cars to serve the grain trade. Thus, if the rationalization proposal resulted in a substantial reduction in the number of carloads originated on the lines with a maximum capacity of 177,000 pounds, and an increase in the carloads originated on lines with capacity of 220,000 pounds or more, it could be possible for Canadian National to shift from the use of the smaller capacity cars to the use of the larger capacity cars, if such cars were available.

To test whether such a shift could occur, I first examined the effect of rationalization on Canadian National's miles of line by maximum carrying capacity. This examination revealed that rationalization would cause a reduction of 1,172 miles of light capacity lines--a reduction of 34.8 percent in the miles of such lines operated in 1974.

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*Data presented before this Commission show CP Rail's average load per car for direct shipment statutory grain to be 65.2 tons and Canadian National's to be 57.8 tons (see Appendix E).

TABLE 6

Capacity Distribution of the Canadian National Network in the Prairie Provinces Before and After Rationalization

Item	Miles by Line Capacity			
	177,000 lbs.	220,000 lbs.	263,000 lbs.	Total
Total Miles in Network				
1974--Actual	3,371	2,120	3,892	9,383
1974--Rationalized System*	2,199	2,115	3,892	8,206
Net Change in Miles	-1,172	-5	0	-1,177
Percent Change	-34.8%	-0.2%	0.0%	-12.5%
Percentage Distribution of Miles in Network				
1974--Actual	35.9%	22.6%	41.5%	100.0%
1974--Rationalized System	26.8%	25.8%	47.4%	100.0%

*8.0 miles of new construction is assumed to be at 220,000 pounds maximum capacity.

Source: GHTC Volume I Report and CCTGR 1974 data base.

To test the potential impact of this reduction, I compared the number of carloads actually originated in 1974 by line capacity category with those that would be originated under the rationalization proposal. Table 7 shows that there would be an increase of 9,321 carloads originating on the 220,000 pound capacity lines (6,498 carloads) and on the

263,000 pound capacity lines (2,823 carloads). The 177,000 pound capacity lines would experience a corresponding decrease plus an additional 2,093 carloads which represents the net carloads transferred from Canadian National to CP Rail.

TABLE 7

Distribution of Canadian National Statutory Grain Carloads by the Maximum Capacity of the Originating Lines

Line Capacity	Number of Carloads				Net Change	Percentage Change
	1974 Actual		1974 Rationalized System			
	Number	Percent Distribution	Number	Percent Distribution		
177,000 lbs.	69,090	41.6 %	57,676	35.2%	-11,414	-16.5%
220,000 lbs.	31,390	18.9%	37,888	23.1%	6,498	+20.7%
263,000 lbs.	65,624	39.5%	68,447	41.7%	2,823	+ 4.3%
TOTAL	166,104	100.0%	164,011	100.0%	- 2,093	xxx

Source: CCTGR 1974 data base.

While Canadian National's car type selection was dictated, to some extent, by the limiting capacities of the lines they served in 1974, my analysis of their output data

reveals that car availability was the controlling factor. For example, Canadian National handled only 13,869 of their total 166,104 carloads of direct shipment statutory grain in railway-owned and Canadian Wheat Board hopper cars. However, Table 7 shows that nearly 66,000 carloads were originated on lines with a 263,000-pound maximum capacity, i.e., lines that could have accommodated the larger capacity cars. The 1974 output data slso indicate that about 75 percent of Canadian National's total carloads were carried in the smaller capacity grain box cars and 45-ton steel box cars. Table 7 shows that only about 42 percent of the traffic available originated on lines which required such cars.

For CP Rail, the impact of rationalization is somewhat different. As indicated earlier, virtually all of CP Rail's lines in the Prairie Provinces are of 220,000-pound capacity or more. As a result, virtually all of the lines to be abandoned are of that capacity. In fact, the miles of light capacity lines to be abandoned on CP Rail is equal to the miles of such lines to be transferred to CP Rail from Canadian National. Table 8 shows the impact of the rationalization proposal on CP Rail's system network within the Prairie Provinces.

TABLE 8

Capacity Distribution of the CP Rail Network in the Prairie Provinces Before and After Rationalization

Item	Miles by Line Capacity				Total
	177,000 lbs.	220,000 lbs.	251,000 lbs.	263,000 lbs.	
Total Miles in Network*					
1974--Actual	133	3,908	107	4,054	8,202
1974--Rationalized System**	133	2,962	107	4,034	7,236
Net Change in Miles	0	- 946	0	-20	-966
Percent Change	0.0%	-24.2%	0.0%	-0.5%	-11.8%
Percentage Distribution of Miles in Network					
1974--Actual	1.6%	47.7%	1.3%	49.4%	100.0%
1974--Rationalized System	1.8%	40.9%	1.5%	55.8%	100.0%

*Excludes approximately 53 miles of Category C lines that were in the network in 1974.

**14.0 miles of new construction assumed to be at 220,000 pounds maximum capacity.

Source: GHTC Report Volume I and CCTGR 1974 data base.

Though most of CP Rail's mileage in Western Canada is on lines of 220,000 pounds or more capacity, the rationalization proposal will result in an increase in the number of CP Rail carloads originating on 177,000 pound-capacity lines. The cause of this increase is the

transfer of lines from Canadian National to CP Rail. As an aside, it should be noted that an increase of 5,102 carloads originating on light capacity lines could cause some temporary operational problems for CP Rail because their system is geared to operations over heavier weight rail. These possible temporary problems would, of course, be eliminated if the transferred lines are upgraded.

TABLE 9

Distribution of CP Rail Statutory Grain Carloads by the Maximum Capacity of the Originating Lines

Line Capacity	Number of Carloads				Net Change	Percentage Change
	Before Rationalization		After Rationalization			
	Number	Percent Distribution	Number	Percent Distribution		
177,000 lbs.	193	0.1%	5,295	3.3%	+5,102	+2,643.5%
220,000 lbs.	85,575	53.4%	76,783	47.5%	-8,792	- 10.3%
251,000 lbs.	1,328	0.8%	1,328	0.8%	0	0.0%
263,000 lbs.	73,335	45.7%	78,141	48.4%	+4,806	+ 6.6%
TOTAL	160,431	100.0%	161,547	100.0%	+1,116	xxx

Source: CCTGR 1974 data base.

In 1974, virtually all of CP Rail's statutory grain traffic could have been transported in the heavier loading railway-owned and government-owned hopper cars. However, these car types accounted for only 21,685 carloads out of the 160,431 carloads transported or 13.5 percent of the total carloads carried. It is clear that CP Rail's equipment selection, like that of Canadian National, was not dictated by the capacity of the lines on which the grain originated, but rather by the availability of cars.

During the course of this Commission's public inquiry, no evidence was uncovered that would indicate that the railways did not fully utilize the Canadian Wheat Board hopper cars that were available in 1974. And, to the best of my knowledge, no such evidence was placed before the Grain Handling and Transportation Commission. Based on all of the above, I conclude that the relative mix of the car types used to transport the direct shipment statutory grain in 1974 was not constrained, to any significant extent, by the weight limitations of the lines served. Rather, it was dictated by:

- the number of government-owned hopper cars available;
- the fact that each railway has a fleet of older and smaller box cars which are substanstantially

dedicated to grain service and which are not particularly well-suited to, or economically feasible for, the carriage of other commodities (or, for that matter, the carriage of grain); and

- the existence of the revenue shortfall experienced by the railways in the carriage of statutory grain which has resulted in their disinvesting in the grain car fleet.

This conclusion does not imply that a more efficient mix of car types cannot be employed in the transportation of statutory grain or that the rationalization proposal would not increase the potential for use of the more efficient, larger capacity cars. Rather, it stems from my judgment that the rationalization proposal alone will not and cannot change the other factors which effectively controlled the mix of car types actually employed in 1974. The Federal Government's purchase of 6,000 additional 90-ton and 100-ton capacity hopper cars subsequent to 1974,* the railways' continuing withdrawal of the smaller grain box cars from service (because of age and obsolescence), and the implementation of the rationalization proposal will

*In 1974, there were only 2,000 Canadian Wheat Board hopper cars in service.

permit the increased use of the more efficient, larger cars in the future transportation of statutory grain.

For purposes of this study, I assumed that the reduction in CN traffic to Thunder Bay (1,528 carloads) and Vancouver (565 carloads) would result in a reduction of 2,093 carloads carried in 45-ton steel box cars. And, the increase in CP traffic to Thunder Bay (815 carloads) and

TABLE 10

1974 Impact of Rationalization on Carloads of Direct Shipment Statutory Grain Carried by CP Rail and Canadian National

Railways	Total Direct Shipment Tonnage	Number of Direct Shipment Carloads	Average Load Per Car	Number of Carloads in Box Cars	Percent of Carloads in Box Cars
Canadian National					
1974 Actual	9,603,996	166,104	57.8	152,235	91.7%
After Rationalization	9,530,680	164,011	58.1	150,142	91.5
CP Rail					
1974 Actual	10,460,373	160,431	65.2	138,745	86.5%
After Rationalization	10,533,599	161,547	65.2	139,873	86.6
CN and CP Combined					
1974 Actual	20,064,279	326,535	61.4	290,980	89.1%
After Rationalization	20,064,279	325,558	61.6	290,002	89.1

Source: CCTGR 1974 data base.

Vancouver (301 carloads) would result in an increase of 1,116 carloads carried in box cars. The estimated overall impact of rationalization on the carloadings required to handle the 1974 direct shipment statutory grain is shown by origin subdivision in Appendices C and D and is summarized by railway in Table 10 (preceding page).

Routing

At first glance, it would appear that the abandonment of 2,165 miles of the Prairie rail network would have a significant impact on the routing of the statutory grain traffic. There will, of course, be some routing changes resulting from the changes in the origin locations of the statutory grain. However, for reasons discussed above, these changes would be relatively minor and would be confined largely to the initial movement between the country elevator and the first assembly/distribution yard. That is, the changes in origin locations and volumes would have virtually no impact on the routes used or carloads handled between the first assembly/distribution yard and the statutory rate destinations.

A review of the rationalized system maps* reveals that, for the most part, the actual 1974 routes from the origin

*Op. Cit., GHTC, Maps #1 and #2.

stations retained in the rationalized system to the statutory rate destinations would remain intact. There are, however, some instances where the abandonment, or transfer of line ownership, would render the 1974 routes unusable or nonexistent. Appendix F identifies each 1974 route which could not be used and the alternative route utilized to develop the output unit data base for the rationalized system. As shown thereon, the actual 1974 routes from three CP Rail subdivisions and from nine Canadian National subdivisions would be unusable after rationalization of the system. In addition, the 1974 routes used by traffic originating on the transferred subdivisions also would be unusable. Appendix G identifies the routes used to develop the output unit data base for this traffic.

Output Unit Development

Each of the above described changes in the 1974 grain transportation system would have some impact on the work or output units incurred by the railways in transporting the grain from the primary elevators to the statutory rate destinations. The data used to develop an estimate of this impact were the underlying working papers to the 1974 direct shipment statutory grain output units developed by CP Rail and Canadian National, and adopted

by this Commission in its determination of 1974 costs.* The CP Rail data were developed from an actual trace of 20,064 sample carloads of direct shipment statutory grain.** For Canadian National, the data were developed from an analysis of the car- and train-related output units on each subdivision which handled statutory grain in 1974.***

From these data the average 1974 output units per car were developed for each grain originating station on CP Rail and each grain originating subdivision on Canadian National. The originating stations and subdivisions were then categorized according to their disposition under the rationalization proposal (e.g., abandoned, transferred, retained without routing changes, retained with routing changes). The abandoned stations or subdivisions obviously would not cause any output units to be generated on the rationalized system and therefore were eliminated from the analysis. Similarly, the stations or subdivisions to be transferred were treated as

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*See CCTGR Report, Volume I, pp. 19-24 and Appendix E.

**The development of CP Rail output units for the sample cars and the expansion of the resulting sample totals to an annual basis are described at pages 2 through 22 of CP Rail Exhibit CP-3 submitted to this Commission.

***The development of the Canadian National output units is described at pages 21 through 32 and pages 62 through 128 of Canadian National Exhibit CN-2 submitted to this Commission.

abandoned with respect to the output units that would be incurred by the railway that served them in 1974. For the retained stations on subdivisions that would not experience any changes in routing, the output units were developed by multiplying the total direct shipment carloads by the calculated 1974 average output units per car. For the retained stations on subdivisions that would experience changes in routing, the 1974 average output units per carload were adjusted to reflect the new routing and then multiplied by the total direct shipment carloads that would be originated thereon.

Since the number of carloads originating on the lines received in transfer was relatively small, the data available for those lines reflected the operations and routes of the transferring railway. The output units that would be incurred by the receiving railway for traffic originating on these lines were estimated in the following manner. First, it was assumed that the receiving railway would operate the transferred lines as an extension of, or spur to, the existing line in the system where the transferred line would connect. The average output units per car experienced at the connecting station (CP) or subdivision (CN) were used as an estimate of the output units that would be incurred on the carloads that would originate on the transferred lines. Where appropriate, these

surrogate average output units per car were adjusted to reflect distance changes.

While the above outlined methodology is predicated on certain assumptions and judgments, it is significant to note that 39 percent and 38 percent of the carloads that would be originated by CP Rail and Canadian National respectively were on stations or subdivisions that would experience no change whatsoever under the rationalization proposal.

TABLE 11

Rationalized System
Distribution of Carloads Carried
According to Type of Line Changes

Type of Change	CP Rail		Canadian National	
	No. of Carloads	Percentage Distribution	No. of Carloads	Percentage Distribution
No Change	63,492	39.3%	61,880	37.7%
Volume Changes Only	85,668	53.0	70,564	43.0
Partial Abandonments*	4,233	2.6	14,728	9.0
Routing Changes**	8,154	5.1	16,839	10.3
TOTAL	161,547	100.0%	164,011	100.0%

*May also include volume changes.
**Includes transferred subdivisions.

Source: Derived from Appendices C, D, F, and G hereto.

Additionally, 53 and 43 percent of the CP Rail and Canadian National carloads were originated on subdivisions that would experience only volume changes. Of the carloads originated on these subdivisions only nine percent represent an increase over the 1974 carloads, i.e., the remaining 91 percent of the carloads were originated on those lines in 1974. Only eight percent of the CP Rail carloads and 19 percent of the Canadian National carloads were on subdivisions that would experience partial abandonments and/or routing changes.* These percentages are summarized in Table 11 (preceding page).

Car-Related Output Units

The above described changes in origin locations, carloads carried, car types utilized, and routings are the only changes from rationalization that could impact on the car-related output units incurred by CP Rail and Canadian National.

Appendix H shows the changes to the 1974 car-related output units of CP Rail and Canadian National that would

*As the CP Rail average output data per car was available on a station-by-station basis, the impact of partial abandonment was accounted for under the methodology utilized. For Canadian National, the 1974 average output data per car for each subdivision that would be partially abandoned was evaluated and adjusted to reflect any significant mileage changes that would result therefrom.

result from implementation of the rationalization proposal. Table 12 shows a comparison of the car-related output units per car for year 1974, before and after rationalization, and reveals that rationalization would have virtually no impact on the average characteristics of the 1974 car-related output units.

TABLE 12

Comparison of Year 1974 Car-Related Output Units Per Car
Before and After Rationalization

Item	Car-Days	Car-Miles	Ton Miles (000)		Switching Minutes	
			Gross	Net	Yard	Train
CP Rail						
Before Rationalization	22.93	1,564.57	91.92	56.05	32.59	3.89
After Rationalization	22.68	1,566.87	92.02	56.10	32.78	3.88
Change Due to Rationalization						
Amount	-0.25	+2.30	+0.10	+0.05	+0.19	-0.01
Percentage	-1.1%	+0.1%	+0.1%	+0.1%	+0.6%	-0.3%
Canadian National						
Before Rationalization	22.73	1,646.97	90.59	52.94	36.13	4.88
After Rationalization	22.50	1,652.35	91.09	53.43	36.02	4.86
Change Due to Rationalization						
Amount	-0.23	+5.38	+0.50	+0.49	-0.11	-0.02
Percentage	-1.0%	+0.3%	+0.6%	+0.9%	-0.3%	-0.4%

Source: Appendix H hereto.

Train-Related Output Units

When applied to the 1974 rail transportation of statutory grain, the rationalization proposal essentially results in the movement of the same volume of grain from a reduced number of origin elevators located on a reduced number of grain gathering lines. This feature presents an opportunity for changes in all of the train-related output units, except fuel,* over and above those resulting from changes in origin locations and routings which were captured by the methodology described supra. This methodology eliminated the total train-related output units incurred in the 1974 transportation of statutory grain attributable to the carloads originated on all CP Rail and Canadian National stations that would be abandoned or transferred. This methodology also added to the data base the total train-related output units attributable to: (1) the additional carloads that would be originated at all CP Rail and Canadian National stations that would incur traffic increases, and (2) the total carloads that would be originated on the lines received in transfer.

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*Given the current state of the art of determining fuel consumption, the change in gross ton-miles due to rationalization is probably the best available estimator of the changes that would occur in fuel consumption. (See CCTGR, Report Volume I, pp. 148-152.)

Essentially, this methodology followed the costing procedures of both railways which provide that the marginal change in train-related output units is 100 percent variable with a marginal change in the volume of traffic carried.* However, in this particular instance, the issue is not related to the impact of marginal growth or decline in traffic volume on the railways' train requirements. Rather, the issue is whether the origination of a fixed or static volume, as measured in tons, at a fewer number of stations on a reduced mileage network would cause changes in the output units required to transport that tonnage. In my opinion, it is proper to evaluate the impact of the rationalization proposal on a short-term or added traffic theory basis. This requires a determination of the extent to which the increases or decreases in carloads on subdivisions that would experience traffic changes would increase or decrease the number of trains operated in 1974.

Generally, both CP Rail and Canadian National provide train service on the grain gathering lines on an "as needed basis." Thus, their ability to reduce train service, commensurate with the reduction in volume on those subdivisions that would experience traffic decreases, is dependent upon

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*This Commission adopted this concept in its previous cost determinations for reasons described at pp. 57 through 59 of its Report Volume I.

the extent to which the volume reduction would permit a reduction in the train service requirements--a matter largely within the control of the Canadian Wheat Board.

The subdivisions remaining in the rationalized system that would experience volume decreases are few and number only four on CP Rail and six on Canadian National (see Appendices C and D). All of these subdivisions would experience partial abandonments as a result of the rationalization proposal. And five of them (Strathmore, Erwood, Amiens, Stettler, and Tonkin) would experience a rerouting of their traffic. While it is likely that rationalization would not substantially decrease the number of times these subdivisions would have to be served, it appears that the reduction of the subdivision mileage, and the potential for consolidation of the trains that served these and other subdivisions in 1974, should enable the railways to reduce their train-related output units in direct proportion to the traffic decreases.

The ability of the railways to absorb the increased carloadings on those subdivisions that would experience traffic increases is largely a matter of the existence of excess capacity. To identify and quantify the existence of true excess train capacity is, at best, difficult due to the seasonal fluctuations in volume, the influence of

weather on capacity, and the influence of weather on the operation of the line itself. Further, the capacity of a train can be expanded by the addition of diesel units to the power consist, i.e., an increase in one of the train-related output units that is not accompanied by an increase in the other train-related output units.

In a very general sense, the maximum train capacity on the branch lines is about 30 cars per diesel unit in the summer and 20 cars per diesel unit in the winter with a maximum of two diesel units per train. However, the capacity on individual subdivisions will vary widely from this general average and, therefore, a precise determination of the excess capacity on each of the trains that operated on each subdivision that would experience increased traffic, would require a detailed microanalysis of each subdivision's day-to-day operations.

In this instance, such an analysis clearly was not warranted due to the relatively insignificant number of train-related output units that would be attributed to the additional carloads--assuming that the concept of 100 percent variability with traffic volume was applicable. As shown on Table 13, the maximum increase in train-related output units for these additional carloads is less than one percent of the total train-related output units attributed

to the grain traffic--assuming that all of the additional carloads could be absorbed in existing trains.

TABLE 13

Maximum Increases in Train Related Output Units Due to Additional Carloadings on Subdivisions with Traffic Increases

Item	Amount (000)		
	Train Miles	Diesel Unit Miles	Crew Wages
CP Rail			
Without Additional Cars	2,885	8,065	$6,048
With Additional Cars	2,910	8,106	$6,093
Difference	25	41	$ 45
Percent	0.9%	0.5%	0.7%
Canadian National			
Without Additional Cars	3,880	8,339	$7,687
With Additional Cars	3,905	8,389	$7,736
Difference	25	50	$ 49
Percent	0.6%	0.6%	0.6%

Source: CCTGR 1974 data base

The available data (ranked in Table 14) indicate that additional carloadings represent less than a 15 percent increase to the total 1974 carloadings originated on 31 of the 39 CP Rail subdivisions, and 26 of the 33 Canadian National subdivisions that would experience traffic increases. Over 50 percent of the total increase in carloadings is accounted for by the increases on these subdivisions.

TABLE 14

Distribution of Increased Carloads

Railway/Percent Increase Over 1974 Actual Carloads	Number of Subdivisions	Number of Increased Carloads	Percent of Total Increased Carloads	
			Category	Cumulative
CP Rail				
0.0% - 4.9%	15	511	6.8%	6.8%
5.0% - 9.9%	8	1,345	17.8	24.6
10.0% - 14.9%	8	2,143	28.5	53.1
15.0% - 19.9%	4	1,503	20.0	73.1
20.0% - 24.9%	2	1,345	17.9	91.0
25.0% and over	2	677	9.0	100.0
Canadian National				
0.0% - 4.9%	8	835	12.0%	12.0%
5.0% - 9.9%	14	2,411	34.6	46.6
10.0% - 14.9%	4	575	8.2	54.8
15.0% - 19.9%	2	413	5.9	60.7
20.0% - 24.9%	2	484	6.9	67.6
25.0% and over	3	2,257	32.4	100.0

Source: CCTGR data base.

Information furnished by the railways, on the train capacity on these subdivisions, and the 1974 data base available to this Commission, reveals that in virtually all instances, the increases resulting from rationalization would add an average of less than four cars to each of the loaded trains that operated in 1974. On average, these trains had sufficient excess capacity to absorb the additional cars. All of these data indicate that the railways could have handled the additional cars without the incurrence of additional train-related output units other than fuel.

Appendix H shows the changes to the 1974 train-related output units of CP Rail and Canadian National that would result from implementation of the rationalization proposal. Table 15 (following page) shows a comparison of the train output units per car for year 1974, before and after rationalization, and reveals that the overall efficiency of the train operations would not be markedly improved by the implementation of the rationalization proposal.

Conclusions

My review and evaluation of the data presented above leads me to the general conclusion that, while the GHTC

TABLE 15

Comparison of the Year 1974 Train Output Units Per Car Before and After Rationalization

Item	Train Miles	Diesel Unit Miles	Crew Wages
CP Rail			
Before Rationalization	18.31	50.64	$38.47
After Rationalization	17.86	49.92	$37.44
Reduction Due to Rationalization			
Amount	0.45	0.72	$ 1.03
Percent	2.5%	1.4%	2.7%
Canadian National			
Before Rationalization	23.82	51.27	$47.54
After Rationalization	23.66	50.85	$46.87
Reduction Due to Rationalization			
Amount	0.16	0.42	$ 0.67
Percent	0.7%	0.8%	1.4%

Source: Appendix H hereto.

proposal would have some effect on the output units incurred in the transportation of statutory grain, the abandonment of about twice as many miles of prairie branch line would be necessary to effect a substantial and significant change

in the operations of the railways and the work or output units required to perform the grain transportation service.

Volume Related Costs--Rationalized System

Appendices I and J present a detailed comparison of the volume-related variable costs this Commission found were incurred by CP Rail and Canadian National in the transportation of direct shipment statutory grain and those that would have been incurred on the rationalized system. As a result of the insignificant change in the output units discussed supra, the changes in costs are also insignificant and amount to a reduction of only $1.308 million (0.8 percent). The principal portion of this reduction ($1.08 million) resulted from the reductions in train operations (see Table 16).

TABLE 16

Comparison of the Year 1974 Volume-Related Variable Costs Incurred by the CP Rail and Canadian National (Combined) in the Transportation of Direct Shipment Statutory Grain

Cost Element	Amount ($000,000)		Decrease from Rationalization
	Before Rationalization	After Rationalization	
Running Track and Roadway Property*	$ 23.729	$ 23.821	(0.092)
Yard Track and Roadway Property	3.815	3.808	.007
Train Operations	66.034	64.954	1.080
Yard Operations	12.709	12.671	.038
Freight Car Operations	48.822	48.627	.195
Other Cost Elements**	12.188	12.108	.080
TOTAL	$167.297	$165.989	1.308

NOTE: Amount shown includes operating costs, depreciation expenses, and capital funds costs. Capital funds costs are at a capital funds rate of 20.80 percent for CP Rail and 11.31 percent for Canadian National.

*Does not include the volume-related costs incurred on the Grain Dependent Lines.

**Includes depreciation and capital funds costs for signals and communications.

Source: Appendices I and J hereto.

GRAIN DEPENDENT LINES--COST IMPACT

In its initial findings, this Commission adopted a concept whereby 7,127 miles of the prairie rail branch line network where delineated as lines that were dependent upon statutory grain traffic for their continued existence. Collectively, these lines were identified as grain dependent lines and were treated differently in the cost analysis than were the non-grain dependent lines.* Virtually all of the grain dependent lines were evaluated by the GHTC and many would be subject to abandonment under their rationalization proposal. This section explores the changes that rationalization would cause to the 1974 structure of and the 1974 volume of grain originated on the grain dependent lines. From this, the section then identifies the impact these changes would have on the costs incurred by the railways.

Grain Dependent Lines--Structure Changes

Appendix H to this Commission's Volume I Report identifies the miles of grain dependent lines operated in 1974 by CP Rail (3,771.8 miles) and Canadian National (3,355.1

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*See CCTGR Report Volume I, pp. 106-129 for a more detailed discussion on the identification of, and cost concepts applied to, the grain dependent lines.

miles). Table 17 (following page) shows that the GHTC rationalization proposal would eliminate 1,927.5 miles on CP Rail (850.3) and Canadian National (1,077.2) from the grain dependent line network--an overall reduction of 27 percent.*

Obviously, mileage reductions of this magnitude would have a significant and substantial impact on the line-related costs incurred by the railways in the transportation of statutory grain. However, the abandonment of these lines would not cause the number of carloads originated on the grain dependent lines to change in the same proportion. Appendices K and L hereto show the number of direct shipment carloads that originated on the grain dependent lines in 1974 and the number that would have been originated if the GHTC rationalization proposal were implemented. A comparison of these appendices with Appendices C and D reveals that 23 of CP Rail's 27 subdivisions and 19 of

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*In compiling these data, the existence of slight differences in the individual subdivision mileages used by this Commission and by GHTC was noted. This Commission's data base contains a total of 2,021.7 miles of Category B grain dependent lines for CP Rail and 3,229.5 miles for Canadian National. This compares to the 2,015.2 miles for CP Rail and 3,229.2 for Canadian National contained in the GHTC data base. For ease of presentation and ready reference to the data base underlying this Commission's Volume I cost ascertainment, the miles shown on Table 17 are from the CCTGR data base.

TABLE 17

Impact of Rationalization on Grain Dependent Lines

Item	Miles of Grain Dependent Lines		
	CP Rail	Canadian National	Total
Miles-1974 Actual			
Category A	1,697.4	125.6	1,823.0
Category B	2,021.7	3,229.5	5,251.2
Category C	52.7	0.0	52.7
TOTAL	3,771.8	3,355.1	7,126.9
Miles-Rationalized System			
Basic Network	2,159.6	983.2	3,142.8
Prairie Rail Authority	761.9*	1,294.7**	2,056.6
TOTAL	2,921.5	2,277.9	5,199.4
Mileage Reduction			
Amount	850.3	1,077.2	1,927.5
Percent	22.5%	32.1%	27.0%

*Includes 92.7 miles transferred from CN and 14.0 miles of new construction.

**Includes 121.5 miles transferred from CP Rail and 8.4 miles of new construction.

Source: CCTGR 1973 data base.

Canadian National's 20 subdivisions that would be abandoned or transferred were grain dependent lines.* Similarly, five of Canadian National's six subdivisions and three of CP Rail's four subdivisions that would experience traffic decreases are grain dependent subdivisions.** Table 18 (following page) shows virtually the entire decrease in carloadings due to rationalization occurs on grain dependent lines.

However, a substantial portion of the loss in carloadings on these grain dependent lines show up as gains in carloadings on other grain dependent lines remaining in the system and on grain dependent lines received in transfer. Table 19 (page 66) shows the relationship of these increases.

As a result of these offsetting increases and decreases, the significance of the grain dependent lines in terms of carloads originated would remain about the same under rationalization as it was in 1974 (see Table 20).

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*The four CP Rail subdivisions that were not grain dependent lines are Boissevain, Cut Knife, Whitkow, and Meadow Lake. The one Canadian National subdivision that was not a grain dependent line is Inwood.

**The two non-grain dependent subdivisions that would experience decreases are Melfort (CP) and Erwood (CN).

TABLE 18

Percent of Total Carload Decreases that Originated on Grain Dependent Lines

Subdivision Category	CP Rail	Canadian National	Total
Total All Lines-Carloads			
Subdivisions with Decreases	1,012	1,516	2,528
Subdivisions Abandoned	5,513	7,289	12,802
Subdivisions Transferred	5,178	5,802	10,980
TOTAL	11,703	14,607	26,310
Grain Dependent Lines-Carloads			
Subdivisions with Decreases	475	1,178	1,653
Subdivisions Abandoned	5,260	6,609	11,869
Subdivisions Transferred	4,269	5,802	10,071
TOTAL	10,004	13,589	23,593
Percent Grain Dependent Lines			
Subdivisions with Decreases	46.9%	77.7%	65.4%
Subdivisions Abandoned	95.4	90.7	92.7
Subdivisions Transferred	82.4	100.0	91.7
TOTAL	85.5	93.0	89.7

Source: Appendices C, D, K and L hereto.

TABLE 19

Percent of Total Carload Increases That Originated on Grain Dependent Lines

Subdivision Category	CP Rail	Canadian National	Total
Total All Lines-Carloads			
Subdivisions with Increases	7,524	6,975	14,499
Subdivisions Received in Transfer	5,295	5,178	10,473
TOTAL	12,819	12,153	24,972
Grain Dependent Lines-Carloads			
Subdivisions with Increases	3,215	1,530	4,745
Subdivision Received in Transfer	5,295	4,269	9,564
TOTAL	8,510	5,799	14,309
Percent Grain Dependent Lines			
Subdivisions with Increases	42.7%	21.9%	32.7%
Subdivision Received in Transfer	100.0	82.4	91.3
TOTAL	66.4	47.7	57.3

Source: Appendices C, D, K and L hereto.

TABLE 20

Carloads Originated on Grain Dependent Lines
Before and After Rationalization

Item	Number of Carloads Originated		
	CP Rail	Canadian National	Total
1974 Actual			
Total Carloads Originated*	156,192	159,905	316,097
Carloads Originated on Grain Dependent Lines	75,748	71,580	147,328
Percent Originated on Grain Dependent Lines	48.5%	44.8%	46.6%
1974 Rationalized			
Total Carloads Originated*	157,308	157,812	315,120
Carloads Originated on Grain Dependent Lines	74,254	63,790	138,044
Percent Originated on Grain Dependent Lines	47.2%	40.4%	43.8%

*Excludes shipments originated on the NAR.

Source: Appendices C, D, K, and L hereto.

The categorization of a line as grain dependent was predicated upon the line's meeting certain volume and alternative use criteria.* While 18 CN and 18 CP subdivisions that were not categorized as grain dependent in 1974 would receive increases in grain traffic as a result of the rationalization proposal, these increases would not be

*These criteria are delineated at pages 106 and 107 of CCTGR Report Volume I.

of sufficient magnitude to cause any of them to be reclassified as grain dependent. Similarly, the traffic decreases resulting from rationalization on five CN and three CP subdivisions that were classified as grain dependent were not of sufficient magnitude to cause a change in that classification.

In summary, the GHTC rationalization proposal would cause a significant decline in the miles of grain dependent lines operated by both railways, a substantially less significant decline in the carloads originated on grain dependent lines operated by Canadian National, and an insignificant decline in the carloads originated on grain dependent lines operated by CP Rail. The proposal would not cause any additional subdivisions to be classified as grain dependent lines. The impact of these changes in the structure and use of the grain dependent lines on the costs incurred by the railways is examined infra.

Grain Dependent Lines--Costs Changes

The cost implications of the grain dependent lines concept are set forth on pages 106 through 129 of this Commission's Report Volume I. With respect to the grain dependent lines concept, this Commission stated at page 108 of the Report Volume I:

> This Commission's acceptance of the grain dependent lines concept has a significant and substantial impact on the development of costs attributable to the carriage of statutory grain by rail . . .

The significant and substantial impact referred to is related to the finding that the line-related costs of the grain dependent lines are variable with the totality of the statutory grain traffic. The total line-related costs associated with the grain dependent lines were $52.547 million in 1974--$31.666 million on CP Rail grain dependent lines and $20.881 million on Canadian National grain dependent lines.* These line-related costs comprised 25.5 percent of the total variable cost incurred by CP Rail, 20.2 percent of the total variable cost incurred by Canadian National, and 23.6 percent of the total variable costs incurred by the two railways combined.

The data base available to this Commission contained the line-related costs for each grain dependent subdivision. This permitted a separation of the line-related costs among those incurred on grain-related subdivisions that would be retained, transferred, or abandoned under the rationalization

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*Op. cit., CCTGR, Appendices K and M.

proposal.* As detailed in Appendix M, $23.533 million or 74 percent of the $31.666 million of line-related costs incurred by CP Rail in 1974 were attributed to the grain dependent lines that would be retained in the system. For Canadian National, $13.514 million or 65 percent of the $20.881 million of line-related costs were attributed to the grain dependent lines that would be retained.

In addition to the costs that would still be incurred for the lines retained in the system, each railway would also incur line-related costs for the grain dependent lines it received in transfer, and for the miles of new construtution required to link certain grain dependent lines to the system. Based on the average cost per mile for the lines retained in the system, it is estimated that the line-related costs that would be incurred for these lines would be $0.789 million for CP Rail's 107 additional miles, and $0.802 million for Canadian National's additional 130 miles of new construction and transferred lines.

Appendix N displays the estimated changes in the line-related costs that would result from implementation of the

*In those instances where the disposition of a subdivision was divided (e.g., a subdivision that was partially abandoned), the line-related costs were prorated equally over each mile of the line. For example, if 20 miles remained from an original 60-mile subdivision, then one-third of the line-related costs were associated with the retained portion.

rationalization proposal. As shown thereon, rationalization of the system would reduce the line-related costs of CP Rail to $24.425 million--a decrease of 23 percent below the $31.666 million incurred in 1974. Canadian National's line-related costs would be reduced from $20.881 million to $14.316 million--a reduction of 31 percent. For the two railways combined, the line-related costs would be reduced from $52.547 million to $38.741 million--a reduction of $13.806 or 26 percent of the 1974 combined amount.

This Commission also identified $2.918 million of volume-related costs that would be incurred on the grain dependent lines by CP Rail ($1.591 million) and Canadian National ($1.327 million). The rationalization proposal would result in a 2 percent reduction in the carloads originated on CP Rail grain dependent lines and an 11 percent reduction in the carloads originated on Canadian National grain dependent lines. This reduction in carloadings would cause a reduction of approximately the same magnitude in the volume-related costs incurred on the grain dependent lines as shown on Appendix O.

In summary, implementation of the rationalization proposal would result in a reduction of $13.984 million in the 1974 costs associated with the grain dependent lines of CP Rail and Canadian National.

TABLE 21

Comparison of the Year 1974 Variable Costs on Grain Dependent Lines Incurred by CP Rail and Canadian National in the Transportation of Statutory Grain

Grain Dependent Line Variable Costs	Before Rationalization	After Rationalization	Decrease Due to Rationalization
Line-Related	$52.547	$38.741	$13.806
Volume-Related	2.918	2.740	0.178
TOTAL	$55.465	$41.481	$13.984

Source: Appendices N and O hereto.

IMPACT ON 1974 VARIABLE COSTS

In total, it is estimated that full implementation of the GHTC rationalization proposal would have reduced the 1974 variable costs incurred by CP Rail and Canadian National in the transportation of direct shipment statutory grain by $15.324 million or about seven percent. In our 1974 cost determinations, this Commission estimated the costs attributable to transit traffic* on the relationship of direct shipment, volume-related costs to freight revenues. I have assumed that under rationalization, transit traffic

*The costs attributable to transit traffic do not include the costs incurred for "stop-off" or for out-of-route movement.

would experience a cost decrease equal to the relative decrease per car in the volume-related costs. With respect to the NAR, the rationalization proposal would not have any impact on their operations and therefore I have assumed no change in costs.*

The total reductions in the variable costs incurred by the railways which would result from implementation of the rationalization proposal are shown on Table 22.

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*See this Commission's Volume I Report, pp. 170-177 and Appendix O for further discussion and development of the cost attributed to transit traffic and NAR traffic.

TABLE 22

Comparison of Year 1974 Variable Costs Before and After Rationalization

Railway/Item	Amount ($000,0000)		
	Before Rationalization	After Rationalization	Reduction
CP Rail			
Volume-Related Costs			
Other Than Grain Dependent Lines	$ 86.373	$ 86.259	$ 0.114
Grain Dependent Lines	1.591	1.560	0.031
Sub-Total	87.964	87.819	0.145
Line Related Costs	31.666	24.425	7.241
Transit Traffic Costs	2.903	2.878	0.025
Total CP Rail	$122.533	$115.122	$ 7.411
Canadian National*			
Volume-Related Costs			
Other Than Grain Dependent Lines	$ 80.924	$ 79.730	$ 1.194
Grain Dependent Lines	1.327	1.180	0.147
Sub-Total	82.251	80.910	1.341
Line Related Costs	20.881	14.316	6.565
Transit Traffic Costs	1.850	1.843	0.007
Total Canadian National	$104.982	$ 97.069	$ 7.913
Northern Alberta Railways			
Total	$ 3.484	$ 3.484	$ 0.000
Total Railway Costs	$230.999	215.675	$15.324

*Canadian National capital costs are computed at a rate of 11.31 percent.

Source: Appendices I, J, N, and O hereto.

The above described impact of rationalization on the variable costs incurred by the railways gives no consideration to the impact that it would have on the operating and capital expenditures required to rehabilitate and upgrade Prairie rail branch lines to an acceptable operating standard. The information available to this Commission on the amount of such expenditures that will be required is no more explicit and precise than that which was available to the GHTC.* Thus, I am unable to provide any more definitive estimates of the impact of rationalization on these costs than was the GHTC. However, by any measure, it is clear that the expenditures required to effect the needed rehabilitation and upgrading on the branch line network that existed in 1974 would be substantial, and that the proposed rationalization of the system will reduce those expenditures considerably.

Indeed, in final analysis, the most significant impact of rationalization probably will be the reduction in the expenditures required to upgrade and rehabilitate the Prairie rail network. It must be clearly understood, however, that these reductions would be reductions in future costs that would be attributable to the required upgrading

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*Op. Cit., pp. 313-329.

and rehabilitation of the lines to be abandoned--had they remained in service. That is, they would have no impact on the cost or the magnitude of the revenue shortfall experienced by the railways in 1974.

CHAPTER III

PRAIRIE RAIL AUTHORITY--COST IMPACTS

Chapter II explored the impact that the proposed abandonment of 2165.5 miles of prairie rail line would have had on the 1974 variable costs incurred by the railways in the transportation of statutory grain. The remaining 4,250 miles of line evaluated by the GHTC would be assigned to either the basic network or a Prairie Rail Authority (PRA).* The basic network lines would be owned and operated by the railways and the PRA lines would be leased from the railways and operated by them under contract to PRA. These lines would be subject to further evaluation by PRA and ultimately would be assigned to the basic network or would be abandoned.** The rail miles assigned to each category are shown on Table 23.

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*Op. Cit. p. 90.

**I understand that the Prairie Rail Action Committee appointed by the Minister of Transport subsequent to the release of the GHTC Volume I Report will address some of the issues and undertake some of the functions envisioned for PRA.

TABLE 23

Disposition of Lines Remaining in the Prairie Rail Network

Disposition	Rail Mileage			
	CP Rail	Canadian National	NAR	Total
Assigned to Basic Network	604	1,217	85	1,906
Assigned to Prairie Rail Authority	867	1,477	0	2,344
TOTAL	1,471	2,694	85	4,250

The proposed duties of PRA are outlined at pages 91 and 92 of the GHTC Volume 1 Report and, among other things, include the following:

- lease, at a nominal fee, say $1 per branch line per year, all grain related branch lines now designated as Category "B" which do not become part of the basic rail system;

- contract with Canadian National and CP Rail to conduct train operation and related functions on these branch lines on a cost reimbursement basis, including a management fee, and subject to such incentives and penalties designed to

obtain efficient operation as the Prairie Rail Authority may deem appropriate; and

- contract with Canadian National and CP Rail to perform such roadway maintenance as may be required to conduct safe train operation in accordance with prescribed service standards.

PRA LINES--CHARACTERISTICS

Appendix P shows the miles of line that would be transferred to PRA and operated by CP Rail and Canadian National,* the number of direct shipment carloads originated on these lines in 1974, and the junction point(s) of each line with the basic network. From the GHTC Volume I Report it can be determined that, after rationalization, the PRA lines would constitute 15 percent of the total rail mileage operated by CP Rail and Canadian National in the Prairie Provinces and 55 percent of the 4,250 miles evaluated by GHTC that are currently retained in the system.** In 1974, approximately 18 percent of the direct shipment statutory grain carloads that would be originated on the rationalized system came from elevators on the PRA network.

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*The lines to be transferred to PRA are sometimes referred to herein as the PRA network.

**Op. cit., Table XII-2, p. 504.

TABLE 24

Percent of 1974 Direct Shipment Carloads of Statutory Grain Originated on PRA Lines

Railway	Total Carloads	PRA Lines	Percent PRA
CP Rail*	161,547*	23,557	14.6%
Canadian National**	164,011**	36,772	22.4
TOTAL	325,558	60,329	18.5

*Includes 4,239 carloads originated on the NAR.

**Includes 6,199 carloads originated on the NAR.

Source: CCTGR data base.

Perhaps the most significant feature of the PRA network is that virtually all of the lines included were also designated as grain dependent lines by this Commission. As displayed in Table 25 (following page), 762 of the 867 PRA miles to be operated by CP Rail are grain dependent lines as are 1,295 of the 1,477 miles to be operated by Canadian National. Overall, 88 percent of the miles in the PRA network are on lines designated as grain dependent.

TABLE 25

Miles of Grain Dependent Lines in PRA Network

PRA Lines	CP Rail	Canadian National	Total
Total Miles	867	1,477	2,344
Grain Dependent Miles*	762	1,295	2,057
Percent Grain Dependent	87.9%	87.7%	87.8%

Source: CCTGR data base.

In total, the GHTC rationalization and PRA proposals provide for the abandonment or lease to PRA of 1,598 of the 3,772 miles of grain dependent lines operated by CP Rail and 2,364 of the 3,355 miles of grain dependent lines operated by Canadian National in 1974. This results in a grain dependent line mileage reduction of 42 percent for CP Rail, 70 percent for Canadian National and 56 percent for both railways combined. That is, the GHTC proposals could relieve CP Rail and Canadian National from the responsibility for the line-related costs associated with 42 and 70 percent of their respective grain dependent line mileage.

A review of the regional maps and the proposed rail network map (Map #2) reveals that the lines in the PRA network are scattered throughout the three Prairie Provinces and do not form any kind of contiguous rail network. The PRA lines consist of both primary gathering lines (e.g., CP's Arborg Subdivision and CN's Carman Subdivision), and secondary gathering lines (e.g., CN's Miami Subdivision and CP's Wishart Subdivision). The PRA lines make up complete subdivisions in some instances (e.g., CN's Miami Subdivision and CP's Arborg Subdivision), and partial subdivisions in other instances (e.g., CP's Amulet Subdivision and CN's Alliance Subdivision). Most of the PRA lines are "stub end" lines and contain only a single junction point with the basic network.

All of these characteristics lead to the general conclusions that the PRA lines cannot be operated as an independent sub-component of the prairie rail network, and that their consolidation under a single entity presents little or no opportunity for significant cost reducing operational changes.

RAILWAY VARIABLE COSTS

The objective of the research undertaken for this report was to determine the impact that the GHTC recommendations would have on the revenue shortfall incurred by the railways. As such, it was not concerned with the total costs

that would be incurred by PRA, but rather with changes in the railways' costs that would result from the formation of PRA.*

In this context, there is a significant difference between the impact of rationalization and the impact of PRA. The changes in costs due to rationalization stem from the elimination of cost elements that would be incurred without rationalization, i.e., reductions in the total variable cost of producing the transportation service. On the other hand, the PRA proposal per se would not change the physical structure of the prairie rail network and, for reasons indicated previously, probably, would not permit any significant operating changes or economies. Until such time as PRA causes additional lines to be abandoned, there would be no reduction in the total variable cost incurred by the railways.

In that PRA will contract with the railways for the provision of certain services, its formation would merely shift the responsibility for coverage of some amount of costs incurred by the railways to PRA from either the railways themselves or from an existing or proposed Federal

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*In addition to the costs incurred by the railways in grain transportation that would be charged to PRA under the proposed contracts, PRA also would incur costs associated with other rail traffic transported over its lines and with administrative expenses.

Government subsidy program. In this respect, the payments made by PRA to the railways for costs incurred in grain transportation will be the same as the Federal Government's payments to the railways for box car rehabilitation and expenditures for the acquisition of covered hopper cars, i.e., they will be costs incurred in the transportation of statutory grain by rail.*

The annual costs that would be incurred on the PRA lines, like those on any other railway line, fall into the two broad categories of those related to the line and those related to the volume of traffic transported.

Line-Related Costs

With respect to the variable costs associated with statutory grain, PRA would be responsible for the line-related variable operating costs incurred on the 2,057 miles of grain dependent lines included in the PRA network. Appendix Q shows the total line-related costs incurred in 1974 by each railway on the grain dependent PRA lines. The total costs of $14.591 million are comprised of operating expenses of $4.081 million, capital costs of $6.848

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*See this Commissions Report Volume I, Pages 183-187 for further discussion of Federal Government expenditures for grain transportation.

million, and maintenance and capital shortfall costs of $3.662 million.

The proposed duties of PRA clearly indicate that GHTC does not intend that the railways should be compensated for all of the variable line-related costs they incur on PRA lines. Specifically, the GHTC proposal limits the PRA contract with the railways to only the performance of required maintenance.

The mandate of PRA is to further evaluate the lines it would manage and to either designate them as "basic system" lines or authorize their abandonment. In all probability, PRA would not maintain all of its lines at operating standards required for an on-going system. That is, PRA also would defer maintenance on some of its lines and, hence, the maintenance expenditures would not be equal to the maintenance cost--a maintenance shortfall* would exist. The GHTC contemplates the deferral of maintenance on some of the lines and, in essence, recommends that they be operated on a "going-out-of-business" basis.

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*The maintenance shortfall is defined as the difference between the maintenance expenditures incurred by the railways and the maintenance expenditures required to perpetuate existing roadway and related assets at a specified operating standard.

> The Prairie Rail Authority will have, of course, no mandate to operate 'gold-plated' railways. On the contrary, and we reiterate, it should manage the funds entrusted to it in such a manner as to correlate roadway expenditures with anticipated road property service lives, balancing on each line quality service for the longest periods possible, with minimal residual values in the road property entrusted to it. In many cases, this may mean continued minimal maintenance and low operating speeds.*

The above quotation indicates that GHTC intends that PRA should pay for only that maintenance which the railways actually perform on its lines, i.e., PRA payments would not include any allowance for the maintenance shortfall on those lines which receive minimal maintenance. In its initial Inquiry, this Commission concluded that it was appropriate to include the maintenance shortfall** incurred on the grain dependent lines in the costs attributable to the transportation of statutory grain. That PRA would reimburse the railways for only the maintenance actually performed does not change the fact that the economic cost incurred would be equal to the expenditures plus the maintenance shortfall.

The GHTC intent is significant in that it requires a determination of the extent to which the PRA would maintain

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*Op. Cit., GHTC, p. 102. See also recommended duty Number 6 on p. 92.

**The basis for this conclusion is set forth at pp. 125-127 of this Commission's Volume I Report.

its lines at a normalized maintenance level* in order to estimate the costs that would be covered under contract to PRA. At this juncture, there is no basis for determining what portion of the lines assigned to PRA will be maintained on an on-going basis and what portion will be maintained on a minimal going-out-of-business basis. For purposes of this study, it was arbitrarily assumed that PRA would maintain (and, hence, pay the railways for) 50 percent of their lines at the normalized maintenance level and 50 percent at the deferred level. That is, PRA would cover approximately $1.646 million of the $3.291 million roadway maintenance shortfall that would have been experienced on the PRA grain dependent lines in 1974.

With respect to capital costs, the recommendation that the railways lease the lines to PRA obviously is intended to relieve PRA from the burden of the capital expenditures required to obtain ownership of the lines. In general, the terms of a lease arrangement are such that the lessor is reimbursed for the costs associated with capital consumption (i.e., depreciation) and for the use of his capital (i.e., capital funds cost) over the term of the lease.

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*The normalized maintenance level is defined as the level of maintenance wherein no maintenance shortfall exists.

Clearly, the nominal fee lease proposed by the GHTC would not reimburse the railways for the capital costs associated with the PRA lines while they are under the control and management of PRA. PRA effectively will be in a position of control and management of capital assets that belong to the stockholders of CP Limited (CP Rail Lines) and to the people of Canada (Canadian National Lines) without the responsibility of payment for the use of those assets.* It must be concluded, therefore, that the responsibility for coverage of these costs will have to come from other sources (i.e., the railways or the Federal Government).

Based on these interpretations of the GHTC proposal, I conclude that the PRA's contracts with the railways would cover approximately 39 percent of the total 1974 line-related costs incurred by the railways on the grain dependent lines in the PRA network.

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*This report assumes that any issues relating to loss of asset value while the lines are under the control and management of PRA will be covered under the contract between PRA and the railways.

TABLE 26

Coverage of Line-Related Costs Incurred on Grain Dependent PRA Lines
1974 Rationalized System

Item	Amount ($000,000)			
	CP Rail	Canadian National	Total	Percentage Distribution
Costs Included in PRA Contract				
1974 Operating Expenses	$0.881	$3.200	$ 4.081	28.0%
Maintenance Shortfall	0.963	0.683	1.646	11.3
Sub-Total	1.844	3.883	5.727	39.3%
Costs Excluded from PRA Contract				
1974 Capital Costs	3.486	3.362	6.848	46.9%
Maintenance Shortfall	0.962	0.683	1.645	11.3
Capital Shortfall	0.138	0.233	0.371	2.5
Sub-Total	4.586	4.278	8.864	60.7%
Total 1974 Costs	$6.430	$8.161	$14.591	100.0%

Source: Appendix Q hereto.

Volume-Related Costs

To develop an estimate of the volume-related costs that would be covered by PRA contracts with the railways, it was necessary to develop the output units that the railways would have incurred on PRA lines in 1974. These output units were then multiplied by the appropriate unit costs to

estimate the variable volume-related costs attributable to operations on PRA.

The data base available to this Commission permitted us to estimate the car-related and train-related output units that the railways would have incurred on PRA lines using a methodology similar to that described in Chapter II. The estimated output units are shown in Appendix R.

To estimate the total volume-related variable costs associated with these output units, it was necessary to make assumptions regarding the types of cars in which the grain would be carried on both CP and CN, and the horsepower category of the locomotives that would be used by Canadian National. For purposes of this analysis, it was assumed that all of the carloads would be originated in box cars and, in the case of CN, that the box cars would be split 50-50 between the grain box cars and the 45-ton steel box cars.* And, that all of the locomotive unit miles incurred by Canadian National would be in the 800-1,399 horsepower rating category.

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*Canadian National collects their output units and maintains their unit costs for four different categories of box cars used in the grain trade. As shown in Appendix H hereto, the grain box cars and the 45-ton steel box cars were the predominant box cars used by Canadian National in 1974.

With respect to the output units, my understanding of the GHTC proposal leads to the conclusion that the PRA contracts with the railways would cover only those costs caused by the actual movement of the cars on PRA lines. Thus, the costs attributed to operations on PRA lines exclude all carload-related costs such as cleaning, billing, grain doors, and loss and damage.

Since virtually all of the PRA lines are grain dependent lines, the volume-related running track and roadway maintenance costs were based on the unit costs for such lines used by this Commission in its prior cost determinations.* The other output units attributable to operations on the PRA lines were multiplied by the appropriate 1974 unit costs adopted by this Commission in its prior cost determinations to develop the estimated costs that the railways would have incurred on PRA lines in 1974. The total volume-related unit costs that would be incurred on the PRA lines for the output units identified in Appendix R are shown in Appendix S and amount to $2.885 million attributable to CP Rail ($1.131 million) and Canadian National ($1.754 million) operations.

As with the line-related costs, there is some question as to whether all of these variable costs would be covered

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*Op. Cit., p. 122.

under the contemplated contracts with PRA. For the reasons described above, I believe that the variable capital costs associated with the investment in PRA running track and roadway property and the volume-related capital cost shortfall would not be covered. Also, for reasons indicated above, it was arbitrarily assumed that only 50 percent of the maintenance shortfall would be spent on the PRA lines.

By their absence from the list of specific items to be included under the contracts with the railways, there is some question as to whether the $0.733 million of costs associated with freight car operation, depreciation and investment shown in Appendix S would be covered by PRA. However, since the miles and days incurred in the origination of the cars at elevators on the PRA lines and the line-haul movement over the PRA lines are readily identifiable and can, with some degree of reasonableness,* be attributed to the existence of the PRA lines, I have assumed that the costs associated therewith would be covered.

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*While it is clear that the car-miles and the line-haul car-days on the PRA lines are solely related to the existence of the PRA lines, it can be argued that the car-days and train switching minutes incurred at the elevator origins would be incurred elsewhere on the system if the PRA lines did not exist and, therefore, that these costs would not be covered under the contemplated contracts.

In total, it is my judgment that the proposed contractual arrangements with the railways to maintain and conduct operations on the PRA lines would shift the responsibility to PRA for coverage of $2.556 million of the 1974 volume-related costs that would be incurred on the PRA lines.

TABLE 27

Coverage of Volume-Related Costs on PRA Lines
1974 Rationalized System

Item	Amount ($000,000)			Percentage Distribution
	CP Rail	Canadian National	Total	
Costs Covered by PRA Contracts				
Maintenance Expenses	$0.038	$0.155	$0.193	6.7%
Maintenance Shortfall	0.071	0.075	0.146	5.1
Train Operations	0.398	0.806	1.204	41.7
Car Operations	0.169	0.246	0.415	14.4
Capital Costs*	0.305	0.293	0.598	20.7
Sub-total	0.981	1.575	2.556	88.6
Costs Not Covered by PRA Contracts				
Maintenance Shortfall	0.071	0.075	0.146	5.1
Capital Shortfall	0.009	0.009	0.018	0.6
Capital Costs**	0.070	0.095	0.165	5.7
Sub-total	0.150	0.179	0.329	11.4
TOTAL	$1.131	$1.754	$2.885	100.0%

*Other than running track and roadway property.

**Running track and roadway property.

Source: Appendix S

Summary

The foregoing analysis reveals that the GHTC proposal for the formation of a Prairie Rail Authority would shift the burden of covering $8.293 million or 47 percent of the total variable costs attributed to operations on the PRA lines from other sources to the PRA. Overall, the costs to be covered by PRA comprise less than five percent of the total variable costs, that would have been incurred by the railways on the rationalized system in 1974.

TABLE 28

Coverage of Total Variable Costs Incurred on PRA Lines
1974 Rationalized System

Item	Amount ($000,000)		
	CP Rail	Canadian National	Total
Variable Costs Covered Under PRA Contracts	$ 2.825	$ 5.458	$ 8.283
Variable Costs Not Covered Under PRA Contracts	4.736	4.457	9.193
Total PRA Lines	$ 7.561	$ 9.915	$ 17.476
Total All Lines	$115.122	$97.069	$212.191
Percent Covered by PRA	2.5%	5.6%	3.9%

Source: Tables 22, 26, and 27.

CHAPTER IV

RATIONALIZATION AND PRA-- REVENUE AND REVENUE SHORTFALL IMPACTS

Chapters II and III examined the impact that implementation of the rationalization and PRA proposals would have on the variable costs incurred by the railways in the transportion of statutory grain. This chapter presents an analysis of the impact these recommendations would have on the revenues received by the railways and the impact that the cost and revenue changes would have on the revenue shortfall incurred by CP Rail and Canadian National in 1974.

REVENUE

In 1974, CP Rail and Canadian National received a total of $140.0 million from the users of the service and the Federal Government for transporting statutory grain.

TABLE 29

1974 Revenues Received by CP Rail and Canadian National

Revenue Source	Amount ($000,000)		
	CP Rail	Canadian National	Total
Freight Rates	$46.051	$41.997	$ 88.048
Miscellaneous Revenues	0.156	0.223	0.379
Branch Line Subsidy	23.085	28.473	51.558
TOTAL	$69.292	$70.693	$139.985

Source: CCTGR Report Volume I, Appendix F.

Freight Rates

The Volume I Report of the Grain Handling and Transportation Commission indicates that rationalization should not cause any additional increase in freight rates paid for rail transportation service from the origin elevator to the statutory rate destination. An analysis of the reassignment of the statutory grain shipments from elevators on the lines to be abandoned to elevators on the lines to be retained generally verified this contention. In total, it is estimated that the traffic shifts

resulting from rationalization would cause a reduction of $309,000 in freight rate revenues received by Canadian National and a like increase in freight rate revenues received by CP Rail.

Under the GHTC proposal, the PRA will retain the differential between the statutory rates applicable from elevators located on its lines and those applicable from the junction point with the basic network. A review of the statutory rates reveals that, for the most part, the rate that applies from the elevators on PRA lines also applies from the junction point(s) of the PRA lines with the basic network (i.e., there would be no rate differential and therefore no revenue loss to the railways or revenue income to PRA). In total, PRA would receive approximately $161,000 in freight rate revenue from traffic originated on its lines.*

Miscellaneous Revenues

In 1974, the grain dependent lines generated $285,000 in miscellaneous revenue for CP Rail ($114,000) and Canadian

*In preparing this calculation, it was assumed that in those instances where the rate from the elevators on PRA lines was lower than the rate from the junction point, PRA would pay the differential to the railways.

National ($171,000). The abandonment of grain dependent lines would reduce these revenues by $22,000 for CP Rail and $69,000 for Canadian National. The GHTC proposes that PRA retain all revenues from land and elevator rentals on its lines. The CP Rail and Canadian National grain dependent lines in the PRA network yielded approximately $23,000 and $45,000 respectively in miscellaneous revenue in 1974.

Branch Line Subsidy

In 1974, CP Rail and Canadian National received $51.558 million in subsidy revenues attributable to operation of the grain dependent lines. While termed a branch line subsidy, the subsidy payments effectively reflect the loss (as calculated by the Canadian Transport Commission) incurred in the transportation of statutory grain originating on light density lines that are being operated on an abandonment or going-out-of-business basis. Because this Commission's costs were calculated on an on-going basis and because the subsidy reflects both the low revenue received from statutory grain and the light density of the branch lines, it is impossible to determine precisely what subsidy revenue would be lost due to abandonment or to the transfer of lines to PRA. The available data indicates that about 25 percent of the total claimed costs on the subsidized lines are line-related. The loss in subsidy revenue due to

abandonment was estimated at 25 percent of the total subsidy payment times the percent of total grain dependent line-miles that would be abandoned. For lines transferred to PRA, it was assumed that the subsidy payment loss would be equal to the estimated 1974 expenditures of variable costs, excluding maintenance shortfall that would be covered by PRA contracts. On this basis, CP Rail's subsidy revenue would be reduced by $1.3 million due to rationalization and $1.8 million due to PRA. Canadian National's subsidy revenues would be reduced by $2.3 million and $4.7 million due to rationalization and PRA respectively.

Summary

Implementation of the GHTC rationalization and PRA proposals would have resulted in a reduction of $10.4 million in the 1974 total revenues received by CP Rail and Canadian National for the transportation of statutory grain. Of this reduction, $10.1 million reflects the estimated loss in branch line subsidy revenue.

TABLE 30

Summary of Reductions in 1974 Railway Revenue Due to Rationalization and PRA

Revenue Source	Amount ($000,000)		
	CP Rail	Canadian National	Total
Reductions Due to Rationalization			
Freight Rates	$0.309*	$0.309	$0.000
Miscellaneous Revenues	0.022	0.069	0.091
Branch Line Subsidy	1.299	2.285	3.584
TOTAL	$1.012	$2.663	$3.675
Reductions Due to PRA			
Freight Rates	$0.000	$0.161	$0.161
Miscellaneous Revenues	0.023	0.045	0.068
Branch Line Subsidy	1.816	4.700	6.516
TOTAL	$1.839	$4.906	$6.745

*Denotes increase.

Source: CCTGR 1974 data base.

REVENUE SHORTFALL

This Commission previously found that the combined gross revenue shortfall (i.e., the revenue shortfall before subsidy) incurred by CP Rail and Canadian National* from the transportation of statutory grain on the railway network as it existed in 1974 was $139.1 million. The net revenue shortfall (i.e., the revenue shortfall after subsidy) was $87.5 million.** These figures are detailed in Appendix U hereto. In light of the GHTC recommendation that the present branch line subsidy be eliminated, and the problems associated with determining the effect of rationalization and formation of PRA on the amount of branch line subsidy that would be paid, the analysis presented infra is limited to the impact of the GHTC

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*The capital funds costs for Canadian National were computed on the basis of the 11.31 percent commercial capital funds rate without an allowance for income taxes. At the commercial capital funds rate including an allowance for income taxes of 20.80 (the rate used for CP Rail), the gross and net revenue shortfalls each would have been increased by approximately $16.0 million. At the embedded interest rate of government funds invested in Canadian National of 5.94 percent, the gross and net revenue shortfalls each would have been reduced by approximately $9.0 million. See this Commission's Report Volume I, pp. 94-104 for a discussion on the matter of an appropriate capital funds rate for Canadian National.

**These figures exclude the estimated $2.2 million gross revenue shortfall and $1.8 million net revenue shortfall incurred by the NAR.

rationalization and PRA proposals on the gross revenue shortfall.

Rationalization

Table 31 shows the estimated revenue shortfalls that would have been incurred by CP Rail and Canadian National if the rationalized system had been fully operative in 1974.

TABLE 31

Rationalized System Estimated 1974 Revenue Shortfall

Item	Amount ($000,000)		
	CP Rail	Canadian National	Total
Revenues			
Freight Rates	$ 46.360	$ 41.688	$ 88.048
Miscellaneous	0.134	0.154	0.288
TOTAL	$ 46.494	$ 41.842	$ 88.336
Variable Costs			
Line-Related	$ 24.425	$ 14.316	$ 38.741
Volume-Related	87.819	80.910	168.729
Transit Traffic	2.878	1.843	4.721
TOTAL	$115.122	$ 97.069	$212.191
Gross Revenue Shortfall	$ 68.628	$ 55.227	$123.855
Ratio Variable Costs to Revenue	2.48	2.32	2.40

Source: Tables 22, 29, and 30 hereto.

After rationalization, CP Rail and Canadian National would have experienced a $68.6 million and $55.2 million gross revenue shortfall respectively. That is, rationalization would result in a $7.7 million or 10 percent reduction in the gross revenue shortfall actually incurred by CP Rail in 1974. And, rationalization would result in a $7.6 million or 12 percent reduction in the gross revenue shortfall incurred by Canadian National in 1974. The ratio of variable costs to revenues, excluding subsidy revenue, would decrease from 2.65 to 2.48 for CP Rail and from 2.49 to 2.32 for Canadian National.

For both railways combined, rationalization would reduce the 1974 gross revenue shortfall by $15.3 million or 11 percent.

TABLE 32

Comparison of Gross Revenue Shortfall
1974 Actual vs. 1974 Rationalized

Gross Revenue Shortfall	Amount ($000,000)			Percent Reduction
	1974 Actual	1974 Rationalized	Reduction	
CP Rail	$ 76.3	$ 68.6	$ 7.7	10.1%
Canadian National	62.8	55.2	7.6	12.1
TOTAL	$139.1	$123.8	$15.3	11.0%

Source: Appendix U and Table 31.

Rationalization and PRA Combined

If both GHTC's rationalization and PRA proposals had been implemented in 1974, CP Rail and Canadian National combined would have experienced a gross revenue shortfall of $115.8 million. That is, the transfer of the responsibility for coverage of those cost elements described in Chapter III to PRA would reduce further the gross revenue shortfall experienced by the two railways in 1974 by $8.1 million over that which would be incurred if only the rationalization proposal was implemented.

TABLE 33

Rationalized System and PRA Estimated 1974 Revenue Shortfall

Item	Amount ($000,000)		
	CP Rail	Canadian National	Total
Revenues			
Freight Rates	$ 46.360	$ 41.527	$ 87.887
Miscellaneous	0.111	0.109	0.220
TOTAL	$ 46.471	$ 41.636	$ 88.107
Variable Costs			
Line-Related	$ 22.581	$ 10.433	$ 33.014
Volume-Related	86.838	79.335	166.173
Transit Traffic	2.878	1.843	4.721
TOTAL	$112.297	$ 91.611	$203.908
Gross Revenue Shortfall	$ 65.826	$ 49.975	$115.801
Ratio Variable Costs to Revenue	2.42	2.20	2.31

Source: Tables 26, 27, 30 and 31.

Table 34 displays the impact that implementation of both the rationalization and PRA proposals (i.e., GHTC basis) would have on the 1974 revenue shortfall incurred by CP Rail and Canadian National individually and combined.

TABLE 34

Comparison of Gross Revenue Shortfall
1974 Actual vs. 1974 on GHTC Basis

Gross Revenue Shortfall	Amount ($000,000)			Percent Reduction
	1974 Actual	GHTC Basis	Reduction	
CP Rail	$ 76.3	$ 65.8	$10.5	13.8%
Canadian National	62.8	50.0	12.8	20.4
TOTAL	$139.1	$115.8	$23.3	16.8%

Source: Appendix U and Table 33 hereto.

The above analyses do not give consideration to the effects of inflation on the 1974 costs. Clearly, since the statutory rates have not been increased and since there has been a rather significant increase in wage and price levels since 1974, the magnitude of the revenue shortfall will be substantially greater today than it was in 1974. It is my judgment that the 1974 costs have increased by at least 25 to 35 percent as a result of inflation. As some of this

increase would be offset by changes that have occurred in the system (e.g., the Calgary-Edmonton interchange), the increase in the gross revenue shortfall would be somewhat less.

Because of the existence of this inflation and the limitations of the study (i.e., the assumption of a static transportation environment), the results of the analyses described supra cannot be translated directly into the absolute dollar impact that the rationalization proposal would have on the current costs of transporting statutory grain by rail or on the current gross revenue shortfall incurred by the railways. However, in relative terms, I conclude that implementation of the rationalization proposal alone would result in about a 10 percent reduction in the gross revenue shortfall incurred by CP Rail and Canadian National and, implementation of both the rationalization and the PRA proposals would result in about a 15 percent reduction in the gross revenue shortfall.

If the costing concepts adopted by this Commission were applied to the 1977 transportation service provided statutory grain by CP Rail and Canadian National, I estimate that the gross revenue shortfall would be, on an order of magnitude basis, about $180.0 million. I estimate that implementation of the rationalization proposal would

reduce this shortfall by approximately $18.0 to $20.0 million. Implementation of the PRA proposal would further reduce the current railway shortfall by $9.0 to $11.0 million by transferring the responsibility for coverage of certain railway costs to PRA.

CHAPTER V

OTHER GHTC RECOMMENDATIONS

In addition to the rationalization and PRA proposals, the GHTC report presents a series of other recommendations* which could have some impact on the level of costs incurred or revenues received by the railways.

These recommendations differ from those discussed in the preceding chapters. In most instances, they are more general in nature; could be implemented on either the rationalized system, the system that existed in 1974, or the system in existence after PRA has disposed of the lines assigned to it; and they cannot be quantified to the same degree as can the rationalization and PRA proposals. Further, many of the recommendations relate directly to other components of the grain transportation and handling system (e.g., the primary elevator system, Canadian Wheat Board, etc.) and, at most, would have only a secondary or tertiary impact on the railways. The recommendations that have

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*Op. Cit., pp. 520-545.

the greatest potential for impacting on the railways' revenue shortfall are those related to changes in railway operations and equipment, the Prairie rail network, and railway rates. This chapter presents the results of my analysis and evaluation of these recommendations.

RAIL OPERATIONS AND EQUIPMENT

Most of the GHTC recommended changes relating to railway operations and equipment are set forth under the subcategory of Rail Car Utilization.* Before discussing these recommendations, it is perhaps beneficial to provide some general background as to the significance of rail car utilization on railway costs.

Increases in the efficiency of railway car utilization generally result from any one, or a combination, of three factors, namely:

- decreased car cycle time, i.e., a decrease in the total elapsed days (or hours) between the time a car is placed at a primary elevator location for loading of one shipment to the time the car is placed at the same, or another

*Ibid., p. 523.

elevator, location for loading of the next shipment;

- increased utilization of the car capacity, i.e., an increase in the average revenue tons loaded into a railway car in the existing fleet; and

- increased car capacity, i.e., an increase in the loading capacity of the cars utilized in the grain trade through the replacement of existing cars with larger capacity cars.

Each of these factors have a common element--they will reduce, to a greater or lesser degree, the number of cars (and hence, the number of car-days) required to move a fixed tonnage. The second and third factors also will produce a reduction in the number of car-miles expended in the transportation service.

The GHTC report and the data available to this Commission indicate that most car-days incurred in the transportation of statutory grain (like those incurred in the transportation of most other commodities) are related to the time spent at origin elevators, destination terminals, and various yards enroute, rather than the time spent in the actual line-haul or over-the-road movement. The GHTC

report shows that only 13.5 percent of Canadian National's system average car cycle was related to the actual movement of the car.* These data suggest that only 3.1 days of Canadian National's average 1974 grain car cycle, of 22.7 days, were spent in actual movement. Similarly, this Commission's data show that only 2.9 days (12.7 percent) of CP Rail's 1974 average grain car cycle of 22.9 days, were related to the actual movement of the car.

After rationalization, CP Rail and Canadian National will experience average, round trip hauls of about 1,500 and 1,650 miles per carload of statutory grain, respectively. A reduction of, say, 300 loaded and empty miles per car would result in a decrease of about .6 days per car on either railway. Indeed, a 50 percent reduction in the average car-miles per car would create only a 6 to 7 percent reduction in the total car cycle time. Hence, decreases in route-of-movement miles would have virtually no impact on the car cycle time or on the number of carloadings required to move a given tonnage of statutory grain.

*Ibid., Table VI-5, p. 172.

The four-fold increase in the number of government hopper cars available for the transportation of grain, and the decline in the number of railway-owned cars, will decrease the significance of freight car costs vis-a-vis the total variable costs incurred by the railways. This is because the capital cost associated with these cars is borne by the Federal Government, i.e, the railways bear only the repair and maintenance costs. Since capital costs are related predominantly to car-days, and maintenance and repair costs are related predominantly to car-miles, reductions in car-miles probably will have a more pronounced impact on the level of future railway costs than will reductions in car-days.

Open Interchange

The GHTC recommends that the railways generally maintain open interchange points in the Prairie Provinces to make available the shortest, least cost route to destination. Specifically, they recommend that open interchanges be maintained to provide cars originated on CP Lines access to Prince Rupert and Churchill.

General

The principal reason for interchange agreements between railways is to permit a shipper who is served exclusively by one railway to ship his traffic to destinations that are served by other railways. Traditionally, open interchange agreements have not been utilized to provide a second railway access to traffic originated at a location served exclusively by one railway that is destined to a point served in common with other railways. That is, the use of interchange agreements as a means of improving the overall efficiency of a total multi-railway network is not a common practice in North America. Even where interchange is provided to permit shippers at locations served by one railway access to points served by another, it is common practice for the originating railway to transport the traffic over the route that will retain as much of the total haul, as possible, on its own lines.

The railways' general practice of retaining, whenever possible, all of the revenue received from traffic originating on their lines is probably the historical reason why open interchange has not been used to reduce the car-miles required to transport statutory grain. However, the revenue shortfall presently incurred by the railways on this traffic suggests that, today, the railway which would receive

the interchange cars probably would be unwilling to participate in such an agreement. It appears that a policy of open interchange would be equitable to the involved railways only when there is some reasonable degree of equality between:

- the number of additional car-miles generated on traffic received in interchange and the number that would have been generated on the traffic delivered in interchange;
- the number of carloads received in interchange and the number of carloads delivered in interchange; and
- the revenue gained on traffic received in interchange and the revenue lost on traffic delivered in interchange.

The GHTC Report Volume I does not specify where the general open interchange points should be located, or examples of routings where the number of car-miles incurred would be reduced substantially through the availability of such interchanges. However, there is no question that the selective interchange of cars could reduce the total number

of car-miles and, to a considerably lesser extent, car-days* required to move a given number of carloads from the primary elevators to the statutory rate destinations.

The savings from the reductions in car-miles and car-days would be offset, to some degree, by the additional switching minutes and car-days incurred in the interchange of the loaded car from the originating railway, and the subsequent interchange of the empty car back to the originating railway. The extent to which the cost increases and decreases would be self-liquidating is, on the one hand, a function of the magnitude of the mileage reductions and the impact such reductions would have on train operations. On the other hand, it is a function of the location where the interchange would take place and the switching that the car would receive at that, or a nearby, location if it moved via the single-line route.

If the interchange is performed at locations where the involved railways have existing interchange facilities with excess capacity and where, in single-line movements, the originating road would normally switch the car from one of

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*As shown earlier in this chapter, a 50 percent reduction in car-miles would produce a reduction in car-days of less than 10 percent.

its trains to another,* then the cost of interchange would be minimized. If on the other hand, the interchange occurs at points where interchange facilities do not exist, are inadequate, are already at or near capacity, and/or where the originating railway would not switch the cars between its own trains, then the additional costs of interchange could exceed the savings from mileage reductions.

It is impossible to quantify the savings, if any, that would result from open interchange without an identification of specific interchange points, and the origin and destination locations that would be affected. However, some idea of the trade-offs involved can be obtained through an analysis of the relationship between the costs incurred in the switching of a car, and the costs incurred in the 100-mile movement of a loaded car. Such an analysis was conducted under the following assumptions:

- the average interchange of a car between two railways consumes 10 minutes of switching time and one car-day (i.e., five minutes and one-half of a car-day on each railway);

- the reduction in car-miles will cause a reduction in train-related output units and gross

*In general, the costs associated with the switching of a car between two trains, of the same railway, is approximately one-half of the costs associated with interchange switching.

ton-miles equal to the average of these items per 100 car-miles in statutory grain service; and

- interchange cars would not be reloaded and would be returned to the owning road at the interchange point.

Table 35 shows the results of this analysis. This table reveals that the total interchange costs are greater than the car costs for a 100-mile, loaded line-haul movement and are equal to about 80 percent of the car and train-related costs.

TABLE 35

Comparison of Estimated Variable Costs Per Car
Interchange Switching vs. Line-Haul Movement

Item	Cost Per Car
Interchange Switching	
Car Costs	$ 4.84
Switching Costs	27.99
TOTAL	$32.83
Line-Haul Movement (100 Loaded Car Miles)	
Car Costs	$11.51
Train Costs	29.72
TOTAL	$41.23

Note: Both the interchange switching costs and the line-haul movement costs include an allowance for a 100 percent empty return. The costs are based on a simple average of Canadian National and CP Rail costs.

The following general conclusions can be drawn regarding the economics of replacing 100 loaded car-miles with an interchange switch.

- the substitution of interchange for reductions in mileage will be favourable if the interchange occurs at a point where the originating carrier normally switches the car between two of its own trains (i.e., the interchange switch is in lieu of an intertrain switch);

- the substitution of interchange for reductions in mileage will be most favourable when the mileage reductions also cause reductions in train operations; and

- the substitution of interchange for reductions in mileage will not be favourable when the interchange does not replace an intertrain switch, and the mileage reduction does not cause a reduction in train operations.

The interchange of cars between two railways presents an opportunity for the incurrence of problems not found in single-line transportation. It is recognized that the railways occasionally overemphasize these problems in their desire to maintain single-line service whenever possible.

However, there is no doubt that interline service requires a coordination of activities and communication between the two railways not associated with single-line service. The problems associated with the interchange of cars in interline service, compared with those of single-line service, are perhaps most analogous to the problems associated with the interchange of passengers and baggage between connecting flights of two airlines located at opposite ends of the terminal, compared with the interchange of passengers and baggage between two connecting flights of the same air line.

All factors considered, I conclude that the establishment of open interchange points throughout the grain transportation rail network does not present an opportunity for substantial reductions in the costs incurred by the railways. In making this statement, I am aware of the apparent success of the Edmonton/Calgary interchange and the fact that the railways estimated this interchange would produce annual savings of approximately $2.0 million. There is, in my mind, some question as to whether the conditions which contributed to the success of the Calgary/Edmonton interchange exist elsewhere in the system.

Churchill

The proposed open interchange to Churchill is in the traditional concept of interchange--it will permit producers located on CP lines to ship to destinations located on Canadian National lines. Thus, in addition to economic considerations, this recommendation must be considered in terms of the additional flexibility that it would give to the Canadian Wheat Board in their selection of the origin elevators for shipments to the port of Churchill.

Appendix T shows a percentage distribution of the 1974 direct shipment carloads to Churchill by subdivisions. The subdivisions are ranked according to their average loaded haul. As pointed out by the GHTC, year 1974 was peculiar in that all of the grain shipped to Churchill was barley. I assume that the 1974 origin pattern on Canadian National would be somewhat changed under a more normal distribution of the various types and grades of grain shipped to Churchill. Presumably, the exclusive shipment of barley resulted in an increase in the average haul to Churchill.

The railways, in a submission to the GHTC,* determined that the establishment of an open interchange would result

*Canadian National and CP Rail, Examination of the Rail Transportation of Grain to Churchill, Manitoba, submitted to Grain Handling and Transportation Commission, August 1976.

in decreases of 104,000 or 1,295,000 loaded car-miles.* In terms of the average haul, these decreases amounted to between 9.3 and 115.6 loaded miles per car for the 11,198 carloads destined to Churchill in the 1974-75 crop year. GHTC, after adjustment for some discrepancies they found in the railway study, estimated that the open interchange would result in the savings of 762,000 loaded car-miles** --an average of 68.0 miles per car.

Applying the approximated average relationship of interchange costs to line-haul costs, (see Table 35, page 118), to the maximum car-miles savings estimated by the railways, suggests a reduction in 1974 costs of $14.83 per car.*** At the 1974 volume of 10,499 carloads, an open interchange to Churchill would have produced an annual

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*The railways determined the potential mileage reductions on the barley shipments to Churchill on two bases. The first, which yielded a reduction of 104,000 car-miles, assumed that the CP carloads of barley would have originated in the same general geographic areas as did the CN's. The second, which yielded a reduction of 1,295,000 car-miles, assumed that the CP and CN carloads of barley would originate at the elevator locations most proximate to Churchill.

**Op. Cit., p. 207.

***Calculated as follows $41.23 x 1.156 minus $32.83. This computation assumes that the interchange would not replace a transfer of cars between two trains of the same railway, and that the mileage reduction would occasion a reduction in the train-related output units.

savings of $0.156 million. The GHTC estimate of reductions in loaded car-miles would produce a cost increase of $4.79 per car.*

The railway submission to GHTC** points up several other factors that must be considered in appraising the merits of an open interchange to Churchill. For example, their submission shows that if the total 1974 shipments to Churchill had been originated on the most proximate Canadian National lines, the car-mile reduction of 1,186,000 loaded miles would be almost the same as the reduction of 1,295,000 loaded miles that would have been achieved if the shipments were originated on both CN and CP lines closest to Churchill. Similarly, the mere shifting of traffic from CN lines to CP lines in the same general area would produce a savings of only 104,000 car-miles.

While the GHTC Report indicates that they found some discrepancies in the railway data, these data clearly indicate that the establishment of an open interchange to Churchill does not insure significant reductions in the average loaded haul, and is not the only means by which the average haul can be reduced.

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*Calculated as follows: $41.23 X 0.680 minus $32.83. This computation assumes that the interchange would not replace the transfer of cars between two trains of the same railway, and that the mileage reduction would occasion a reduction in the train-related output units.

**Op. Cit., p. 10.

The data available to this Commission indicates that Churchill does not suffer any substantial distance disability vis-a-vis the other statutory rate destinations.

TABLE 36

1974 Direct Shipment Statutory Grain Average Loaded Haul Per Car By Destination

Subdivision	Average Loaded Haul-Miles	
	CP Rail	Canadian National
Armstrong	XXX	810
Thunder Bay	827	849
Churchill	XXX	921
Vancouver	923	991
Victoria	XXX	1,048
Prince Rupert	XXX	1,171

Source: CCTGR Volume I, Appendix E.

Appendix T shows that the seven CN subdivisions closest to Churchill originated more carloads of all types and grades of direct shipment grain in 1974 than were exported through Churchill. If all of the 1974 direct shipment grain to Churchill had been originated on these

subdivisions, the average loaded haul would have been 714 miles--a reduction of 22 percent over the actual average loaded haul.

The fact that all of the grain shipped through Churchill during the 1974-1975 crop year was barley and, as such, it was considered by some not to be representative, and that the first ship did not arrive until late August 1975,* leads to the general conclusion that the selection of the origin elevators for shipments to Churchill is predicated upon many factors and circumstances. As these factors and circumstances will not be affected by the establishment of an open interchange, there is considerable question as to whether such interchange would alleviate their negative impact on the costs incurred by the railway.

All things considered, I conclude that:

- the establishment of an open interchange between CP Rail and Canadian National for grain shipments destined to Churchill would have an insignificant impact on the costs and the efficiency of the rail transportation service;

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*Op. Cit., p. 205.

- the economies that would result could probably be achieved through a concerted effort to originate Churchill grain on those CN lines which are proximate to Churchill; and

- the principal justification for the establishment of an open interchange for Churchill shipments must lie with the flexibility that would accrue to the shipper--namely, the Canadian Wheat Board.

Prince Rupert

The establishment of the Edmonton/Calgary interchange between CP Rail and Canadian National obviously facilitates the opening of Prince Rupert to cars originated on the lines of CP Rail. Clearly, the cars originating on CP Rail lines that would move to Prince Rupert should be the same cars that are handled by Canadian National at Edmonton. Thus, it appears that only some modification to the present agreement would be required to permit cars originated on CP Rail lines to be terminated at Prince Rupert.

The economics of terminating cars originated on CP Rail lines at Prince Rupert in lieu of Vancouver (or, for that matter, cars originating on CN lines) is a matter that cannot

be evaluated entirely in terms of 1974 operations or facilities. Table 37 shows a comparison of selected train and car-related output units for Canadian National shipments to Vancouver and to Prince Rupert.

TABLE 37

Comparison of CN 1974 Output Units Per Car
Vancouver vs. Prince Rupert Terminations

Output Units Per Car	Vancouver Terminations	Prince Rupert Terminations	Ratio Prince Rupert to Vancouver
Car-Days	26.7	26.4	0.99
Car-Miles--Loaded	990.9	1,171.1	1.18
Car-Miles--Total	1,686.4	2,042.4	1.21
Yard Switching Minutes	44.3	27.2	0.61
Train-Miles	24.6	37.6	1.53
Diesel Unit Miles	51.4	84.7	1.65
Crew Wages	$48.41	$72.10	1.49

Source: Derived from CCTGR Report, Volume I, Appendix E.

The above table reveals that the car-days and yard switching minutes per car to Prince Rupert are less than those to Vancouver. However, the average loaded haul to

Prince Rupert was 180 miles greater than it was to Vancouver. This is due to the fact that the distance from Edmonton to Prince Rupert is about 210 miles greater than it is to Vancouver.

With respect to train-related output units, the Vancouver route was clearly the more efficient route. However, it is quite possible that a significant portion of the difference was attributable to the substantially lower volume of cars that were transported to Prince Rupert (e.g., in 1974, there were only 12,224 direct shipment carloads to Prince Rupert compared to 37,031 to Vancouver). An order of magnitude estimate of the impact of volume on the train-related output units can be obtained by comparing the relationship of the train miles per car to the total car-miles per car. The shipments to Prince Rupert incurred 21 percent more car-miles and 53 percent more train miles than did those to Vancouver. From this, it can be concluded that about 21 percent of the increase in train-related output units is due to distance differences, and 26 percent is due to differences in the size or weight of the trains.

If Prince Rupert is to realize its full potential as an export grain terminal, the GHTC Report indicates that the terminal facilities must be enlarged and modernized,

and must be fully integrated into the terminal network.* Clearly, the full implementation of the GHTC recommendations on these matters would have a significant impact on the cost of providing rail service to Vancouver compared to Prince Rupert. However, they will not change the favourable distance advantage of Vancouver.

At the present time, it is concluded that so long as the Edmonton/Calgary interchange is operative, the sending of CP Rail cars to Prince Rupert would cause an increase in the costs incurred by the railways. However, should the GHTC recommendations for changes at Prince Rupert be implemented, and an increased volume of traffic be exported via Prince Rupert, it may be advantageous to make Prince Rupert available to carloads originating on CP Rail lines.

Elimination of the Vancouver rail cost advantage will be dependent upon the extent to which an increase in traffic volume can reduce the train-related output units per car to Prince Rupert, and the extent to which the costs of the longer haul to Prince Rupert can be offset by the greater number of switching minutes and car-days incurred at Vancouver. With respect to this latter point, it must be noted

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*Op. Cit., p. 228.

that the GHTC recommendations for changes at Vancouver are intended to reduce the congestion and, hence, the car-days and switching minutes incurred at that port. That is, improvements in car handling at Vancouver will tend to eliminate the advantage that Prince Rupert has in this area of costs and, thus, make its distance disadvantage more pronounced.

Railway Equipment

The Grain Handling and Transportation Commission makes three recommendations regarding the cars used or to be acquired for use in the transportation of statutory grain.* They are:

- the government car fleet becomes interchangeable between railways and the cars in the fleet not be assigned exclusively to each railway;
- future orders of hopper cars be coordinated with PRA and take into account the large proportion of light carrying capacity lines where 70-ton capacity hopper cars are preferable in replacing box cars; and

*Op. Cit., pp. 523 and 524.

- Transport Canada and the railways undertake an experiment to modify present box cars with roof hatches and end unload gates for use on the lighter capacity Prairie branch lines.

Interchangeable Government Hopper Cars

It appears that the intent of this recommendation is to create a pool of government-owned hopper cars in lieu of the present practice of assigning a prorata share of the fleet to each railway. Presumably, the cars in the pool would be under the direct control of the Canadian Wheat Board.

The concept of pooling cars dedicated to the transportation of a commodity or commodity group is one that has been practiced in the railway industry for many years. There are several conditions wherein the pooling of the government cars could reduce the costs incurred by the railways and/or the costs incurred by the Federal Government. These conditions are:

- Should the Federal Government become the sole or principal supplier of cars for the transportation of statutory grain, the pooling of cars might reduce the total car fleet required.

- Should there be widespread interchange of loaded cars between the railways, the pooling of government hopper cars could reduce the need for the return interchange of empty cars.

- Should there be a substantial imbalance in the timing or location of grain car originations between the two railways, such that one railway generally has a surplus of cars while the other has a shortage, the pooling of government hopper cars would alleviate this situation to some degree.*

The extent to which the pooling of the government cars would be advantageous is largely dependent upon the extent to which the government supplies the car fleet, i.e., as the number of government cars in grain service increases, the potential economic benefits from pooling also increase.

The pooling of government hopper cars should not create any undue burden on the railways or on the grain handling and transportation system in general. However, to the best of

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*It should be noted that the present agreements between the railways and the Canadian Wheat Board provide for a change in the number of cars assigned to each railway should there be a change in the annual volume handled by each.

my knowledge, the conditions required to make pooling beneficial do not exist to any considerable extent today. It is my opinion that pooling would not produce any substantial reduction in the cost of providing the transportation service under extant conditions.

Future Car Acquisitions

The GHTC recommends that future car acquisitions take into account the needs of light carrying capacity lines--particularly those in the PRA network. While not stated, it is presumed that this recommendation refers to future acquisition of cars by the Federal Government. Federal Government acquisition of cars for use in the grain trade is, of course, nothing more than a capital cost subsidy. The present agreements between the Canadian Wheat Board and the railways provide that the railways incur the cost of maintaining and repairing the cars, and the liability for the book value of the cars in case they are destroyed or rendered unusable. The Federal Government incurs the depreciation and capital funds costs. Thus, as the proportion of Federal Government cars in the fleet increases, the costs incurred by the railways decrease because of the transfer of the capital costs from the railways to the Federal Government.

A 70-ton capacity hopper car, obviously, is a more efficient vehicle for carrying grain than is a 50-ton or 60-ton capacity box car. Conversely, it is not as efficient as is a 90-ton or 100-ton capacity hopper car.* All other things being equal, the acquisition of 70-ton capacity hopper cars would result in a decrease in costs when compared to lesser capacity box cars and an increase in costs when compared to higher (90-ton and 100-ton) capacity hopper cars.

There is no doubt that, as pointed out by GHTC, a substantial portion of the PRA lines are light carrying capacity lines and, therefore, cannot utilize the 90-ton and 100-ton capacity hopper cars efficiently, if at all. After rationalization, 2,332 miles or 15 percent of the total CP Rail and Canadian National network in the Prairie Provinces will consist of light carrying capacity lines. The PRA network will be comprised of 1,218 miles of light capacity line. This is 52 percent of the total miles of line in the PRA network.

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*All 8,000 Federal Government hopper cars in service today are 90-ton and 100 ton capacity cars.

TABLE 38

Capacity Distribution of the CP and CN Rail Network in the Prairie Provinces After Rationalization

Item	177,000 lbs.	220,000 lbs.	251,000 lbs.	263,000 lbs.	Total
Miles in Network After Rationalization					
CP	133	2,962	107	4,034	7,236
CN	2,199	2,115	0	3,892	8,206
TOTAL	2,332	5,077	107	7,926	15,442
Percent Distribution	15.1%	32.9%	0.7%	51.3%	100.0%
Miles Assigned to PRA					
CP	85	767	0	15	867
CN	1,133	344	0	0	1,477
TOTAL	1,218	1,111	0	15	2,344
Percent Distribution	52.0%	47.4%	-	0.6%	100.0%
Miles in Basic Network					
CP	48	2,195	107	4,019	6,369
CN	1,066	1,771	0	3,892	6,729
TOTAL	1,114	3,966	107	7,911	13,098
Percent Distribution	8.5%	30.3%	0.8%	60.4%	100.0%

Presumbaly, PRA will find that some of these lines should be abandoned and others should be assigned to the basic network. It follows that some of those in the latter category will be upgraded to a carrying capacity of 220,000 pounds or more as will some of those already in the basic network. It appears that less than 10 percent of the railway

mileage would be in light carrying capacity lines after PRA completes its mission and after the lines in the basic network are upgraded.

As shown by Tables 7 and 9 on pages 37 and 40 hereto, only 62,971 or 19 percent of the 325,558 direct shipment carloads carried in 1974 would be originated on light capacity lines after rationalization. If the recommendations of the GHTC are implemented, the percent of carloads originating on light carrying capacity lines should decline significantly by 1985.

In my opinion, the car acquisition objective should be to replace the aging and obsolete box car fleet with 90-ton and 100-ton hopper cars until such time as there are sufficient cars of this type to serve all primary elevators on lines that are capable of handling such cars.

The 70-ton hopper cars should be acquired only if the number of box cars available to service the light capacity lines proves to be insufficient. Even then, the decision to acquire such cars should be based on the long run benefits from upgrading and use of larger capacity cars compared to those from retention of existing rail and the acquisition and use of lesser 70-ton capacity hopper cars and/or the rehabilitation of box cars.

Obviously, this recommendation would result in the light capacity lines not being operated at their optimum efficiency. That is, the use of box cars on these lines would not be as efficient as the use of 70-ton hopper cars. On the other hand, it will permit the maximization of the efficiency of the other lines and, in terms of rolling stock acquisition, put the capital investment in the more efficient rail wagons.

Box Car Modifications

The GHTC recommendation that an experiment be undertaken to modify present box cars with roof hatches and end unload gates also has as its objective an improvement in the efficiency of the cars used on the light carrying capacity lines. It is my understanding that installation of roof hatches will permit a greater utilization of the cubic capacity of a box car and a greater efficiency in loading, and that the installation of end unload gates will permit a greater efficiency in unloading.

Increases in the loading capacity of a box car will, of course, permit the movement of a fixed tonnage in a fewer number of cars. And, it will reduce the car-miles and car-days incurred in the transportation service. Similarly, reductions in the time required to load and

unload a car might reduce the car cycle time and would relieve some congestion at the destination terminal by increasing the number of cars that could be unloaded per hour or per day.

The available data does not permit an evaluation of the extent to which these modifications would actually reduce car-days and car-miles or an estimate of the cost of the modifications. In this regard, it is my understanding that the equipment presently used to unload box cars at the export terminals would have to be replaced or modified in order to unload box cars with end unload gates. Thus, it would appear that the installation of roof hatches provides a better potential for net cost reductions to the system than does the installation of end unload gates.

RAIL NETWORK CHANGES

This section addresses those GHTC recommendations that could result in changes to the rail network. By extension, these changes also could impact on the costs incurred by the railways in the transportation of statutory grain.

Electrification and Operating Rights

The GHTC has proposed study and research into the feasibility of the use of operating rights over several parallel lines in the basic network and the feasibility of electrification of certain segments of the main line system. Full implementation of the concepts underlying these recommendations could have an impact on the costs incurred by the railways. However, implementation of the recommendations per se would not. I believe that any analysis and evaluation of these matters would be premature at this time and should await the results of the proposed research and studies.

In passing, it should be noted that any economies of operation resulting from electrification would be experienced by grain traffic as well as other commodities being transported on the electrified lines. On the other hand, the cost savings, if any, from the closing of parallel lines and use of trackage rights would not change the costs attributed to grain traffic by this Commission--unless the involved lines were classified as grain dependent lines. This is because the line-related costs of non-grain dependent lines were treated as system constant costs and were not attributed to grain under the costing methodology adopted by this Commission.*

*See CCTGR Report Volume I, pp. 110 and 111 for a more through discussion on this matter.

Clinton Ashcroft Link

The recommended acquisition of the right-of-way and completion of engineering studies for the Clinton Ashcroft Link also would not change the railways' costs. The actual construction of this link and the possible use of the port of Squamish as a major west coast grain export terminal could have some impact. The resources and data base available to this Commission do not permit a ready evaluation of the economic benefits of construction of this link.

My review of the GHTC report indicates that the principal purpose of the link is to provide an alternative to the Fraser Canyon route, should such route become blocked rather than to provide an everyday service route. If this be the case, then, in all probability, the construction and maintenance of the route would probably result in an increase in costs that would have to be covered by all traffic, including grain. The economic value of the route would be dependent upon the extent to which the Fraser Canyon route is blocked and the insurance value of having the "back up" route available.

If, as the GHTC report also suggests,* the principal purpose of the route is to provide the transportation

*Op. Cit., p. 227.

service required to make Squamish a viable port of export for grain and other commodities, then other factors will have to be considered. For example, the recommended modernization and expansion of Prince Rupert and changes at Vancouver should increase the capacity of both ports. Whether implementation of these recommendations and the addition of another major west coast port for grain exports would create costly excess capacity is a matter that must be considered.

Northern Development Railways Department

The GHTC recommends that Canadian National's 72.8 mile Athabasca subdivision and Northern Alberta Railway's 85 miles assigned to the basic network be combined with: the balance of the NAR miles, the Alberta Resources Railway, the Great Slave Lake Railway, and the Canadian National Sangudo subdivision to form the Northern Development Railways Department of the Canadian National Railways. According to the GHTC Report, this department should be given "the maximum latitude for independent action permissible under the Canadian National umbrella."*

*Op. Cit., p. 122.

This recommendation is conditioned upon the continuation of the open interchange between the NAR, on the one hand, and CP Rail and Canadian National on the other. Under this condition, the existence of the Northern Development Railways Department should not cause any change in the volume of traffic tendered by NAR to CP Rail or Canadian National.

This Commission treated the Great Slave Lake and the Alberta Resources Railway as separate divisions of Canadian National in its 1974 cost determination. The evidence presented on the costs incurred by the NAR was deemed unsatisfactory by this Commission and, of necessity, a ratio method was used to produce an estimate of those costs.* The GHTC received considerable evidence on, and devoted several hearing days to, the feasibility and economics of the proposal which led to the recommendation that the Northern Development Railways Department be formed.** In that I did not participate in this phase of the GHTC inquiry, and for reasons indicated above, I do not feel qualified to assess the potential impact of this recommendation on the costs incurred by the involved railways.

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*CCTGR Report Volume I, pp. 171-177.

**Op. Cit., GHTC, pp. 106-131.

The GHTC Report is silent on the matter of funding of the activities of the Northern Development Railways Department. However, in light of their subsidy recommendations, it is logical to assume that the Northern Development Railways Department would maintain its own books and records and that any revenue shortfall incurred by it would be covered by a separate "economic development" subsidy program. Such a program undoubtedly would shift the responsibility for coverage of some CN and NAR costs incurred in the transportation of statutory grain to the economic development subsidy program. This transfer of cost coverage responsibility would reduce the revenue shortfall attributed to statutory grain. However, like the formation of PRA, it would not reduce the costs of transporting statutory grain by rail.

RAILWAY RATES

The GHTC made three recommendations that would impact on the revenues received by the railways and one recommendation that could impact on their historic net revenue shortfall. The recommendations are:

- elimination of stop-off charges for storage or milling-in-transit;
- retention of the statutory rates;

- payment of a subsidy to the railways reflecting the difference between the revenue received from statutory rates and the costs incurred in the provision of the transportation service; and

- resolution of claims outstanding under the present branch line subsidy program.

Elimination of Stop-off Charges

In this Commission's cost determinations, the costs associated with stop-off for storage or milling-in-transit were excluded. The rationale was that the rates charged for this service were not statutory and, therefore, not subject to this Commission's inquiry. Accordingly, the costs and revenues associated with stop-off were excluded from consideration, as were the costs and revenues associated with out-of-route movement.*

In year 1974, CP Rail and Canadian National terminated 525,500 tons of statutory grain traffic that was

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*This rationale was detailed more fully in our Statement of Procedures and Issues and Schedule, 16 February 1976, which was distributed to all interested parties. See also Report Volume I, p. 170.

stopped-off for storage or milling-in-transit.* At a rate of 18** cents per hundredweight, the railways received a total of about $1.9 million in revenue from stop-off charges on this traffic. I have not made a determination of the costs associated with the provision of the stop-off but understand that the Canadian Transport Commission is currently looking into this matter.

However, the provision of stop-off service obviously causes the railways to incur some additional costs over and above those incurred on direct shipment statutory grain. If stop-off charges were eliminated as proposed and the additional costs associated with stop-off were incorporated into the total cost of moving statutory grain, the effect would be to increase the 1974 cost estimates and resulting revenue shortfall.

Retention of Statutory Rate

The GHTC recommendation on the retention of the statutory rate can be interpreted in two different lights. Clearly, the Summary of Recommendations implies that its

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*Op. Cit., CCTGR, Appendix D.

**This rate was recently increased to 20 cents per hundredweight.

intent is to maintain the statutory rates at their present levels when it states:

> The Commission recommends:
> 1) The retention of the Crow's Nest statutory rates. (Emphasis supplied).*

However, GHTC also implies that the recommendation applies only to the statutory nature of the rate and not the level of the rate.**

> Regardless of what rate may be set for the transport of grain to export position that rate must be statutory, not variable. . . . How the differences between the new rate [a rate which covers the cost of the service] and the Crow's Nest rate will be apportioned between the government and the producer is, of course, a matter for government decision. . . .

If the existing statutory rate level is maintained, then the difference between the revenues received by the railways and the costs of providing the service (i.e., the gross revenue shortfall) will continue to increase due to the influence of inflation. If only the statutory nature of the rate is retained, it is possible that the gross revenue shortfall would remain constant, would decrease, or would increase over time.

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*Op. Cit., p. 545.

**Ibid., p. 336.

The retention of only the statutory, non-variable aspect of the present rates also would continue the impact of this factor on the costs incurred by the railways. The GHTC correctly concludes that such rates make it virtually impossible to consider the use of unit trains (or some modified version of the concept).

> The unit train concept would not be of much economic value to producers unless a new and marked departure in the freight rate structure for the carriage of grain was adopted by Parliament in which the mileage-related statutory rate principle is discarded.
>
> The Commission is firmly of the view that the variable tariffs which would give plants, capable of loading unit trains now or in the future any preferential rate treatment, must not be introduced.*

Obviously the logic behind GHTC's conclusion regarding this specific operational change can be extended to any cost reducing change in railway operations which requires investment or the incurrence of additional costs on the part of the user of the service.

I agree with the GHTC's findings that the true unit train concept is probably not feasible within the extant

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*Ibid. p. 186.

marketing and facilities structure of the grain handling and transportation system and that, even if it were, it would not "bring about the millennium in the transport of grain to export positions."*

One of the means of reducing railway costs and increasing car utilization is through the origination of trainload volumes at a single origin location, and the movement of the train from origin to destination without stopping at intermediate yards, except for removal of bad order cars, periodic train and car inspections, and crew changes. That this and other possible operational economies cannot be achieved under the existing non-variable rate structure must be recognized as one of the costs of retaining the institution.

The statutory nature and level of the present rate also has some influence on the degree of risk associated with the transportation of export grain and, therefore, impacts on the determination of the appropriate capital funds rate.**

In a series of five recommendations, the GHTC dealt with the present freight rates on rapeseed, rapeseed meal, and other rapeseed derivatives. The thrust of these

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*Ibid., p. 184.

**See this Commission's Report Volume I, pp. 76-79 for further discussion on this matter.

recommendations is to extend the statutory rates to this grain where it previously was excluded. It is reasonable to conclude that the grain and grain products, proposed for inclusion would yield the same average revenue per ton and the same average cost per ton as do the grain and grain products included in this Commission's cost study. The result of these recommendations would be to increase the revenues, costs, and revenue shortfall.

Assuming implementation of the rationalization and PRA proposals, it is expected that, on average, for every 1974 revenue dollar added by the inclusion of this grain and product the total variable costs would have increased by $2.31 and the gross revenue shortfall* would have increased by $1.31. The total dollar impact of these recommendations is dependent on the number of additional tons brought under the statutory rates.

Railroad Subsidy Payments

The GHTC recommendation that the Federal Government pay directly to the railroads the difference between the revenue received from statutory rates and the appropriately determined costs of transporting grain, obviously, would

*See Table 33, p. 104 hereto.

reduce the railways' net revenue shortfall to zero. This recommendation has certain other ramifications which should be noted.

If, by costs, the GHTC means the variable costs as determined by this Commission, this recommendation would put the railways in a position of economic indifference to the carriage of statutory grain.* After implementation of the rationalization and PRA proposals, it is estimated that a Federal Government subsidy of $115.8** million would have been required to cover the gross revenue shortfall incurred by CP Rail and Canadian National in 1974. Including the Revenue shortfall of the NAR and excluding any consideration of the costs associated with its investment in hopper cars and box car rehabilitation, the Federal Government would have borne about 59 percent of the total variable costs in 1974 through PRA (4.0 percent) and the grain subsidy (55.0 percent). Obviously, as costs increase due to inflation, the Federal Governments' degree of participation in the cost coverage will also increase--unless, of course, the level of the statutory rates is increased.

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*For further discussion on this matter, see pages 64, 65, and 212 of the CCTGR Volume I Report.

**Op. Cit., p. 104.

TABLE 39

Coverage of 1974 Rail Transportation Variable Costs

Item	Amount ($000,000)	Percent
Revenues From Users	$ 88.107	41.1%
PRA	8.054	3.8
Subsidy (CN & CP)	115.801	54.1
Subsidy (NAR)	2.193	1.0
TOTAL	$214.155	100.0%

Source: Tables 31 and 33 hereto.

By extension, the Federal Government also becomes the only participant in the rail component of the grain handling and transportation system that will have a direct financial interest in the efficiency of its operation. In fact, the Federal Government will become the sole beneficiary of any reductions in railway costs achieved through rationalization or other changes to the railway system or operations.

Putting aside the possible consequences of the amount of subsidy, I agree with, and support the finding that it should be related to the commodity transported. If, as a

matter of public policy, the railways are required to transport grain (or for that matter any commodity) for less than compensatory revenues, the revenue shortfall should be covered by a commodity-related subsidy. If lines that are uneconomic because of their light density are required to be retained in service for reasons of public convenience and necessity, they should be covered by a branch line subsidy which incorporates payments for the line-related costs attributable to their continued operation.

I believe that the Grain Handling and Transportation Commission, and this Commission, have demonstrated that the revenue shortfall incurred by the railways in the transportation of statutory grain is caused by both "branchness" and "grainness." While, with respect to export grain, these two problems seem to be one, they are, in fact, different and should be treated separately.

Branchness is, of course, a problem that is not confined to the prairie rail network and is not confined to the carriage of grain. Branchness is a density problem and one which can be, and undoubtedly is, experienced throughout Canada in greater or lesser degrees. Further, it is not necessarily confined to light density lines which originate or terminate traffic that have non-compensatory or marginally compensatory rates--though, admittedly, the

presence of low rates exacerbates the problems of branchness. Branchness, by and large, is a problem related to the need to provide rail transportation service to particular communities or areas. As such, it should be dealt with on a nationwide basis and on a basis which truely reflects the cause of the problem.

Grainness, on the other hand, is a problem that is local to the Prairie Provinces and one that is concerned with grain and grain products for export. As such, it must be dealt with on the basis of the need for the transportation of the commodity,* the ability of the beneficiaries of the transportation service to pay for that service, and the impact that its transportation at less than compensatory rates has on other commodities and industries.

It is my firm and strong opinion that unless the two problems of branchness and graineess which, in the Prairie Provinces, have become inextricably bound together, are

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*The issue of need for the transportation service, perhaps, most succinctly differentiates the branchness problem from the grainness problem in the Prairie Provinces. There can be no question that a need exists for the provision of rail transportation service to move grain from the primary elevators to export position. However, the GHTC has found no need exists for the provision of rail transportation service to some of the areas and communities served in 1974 and leaves open, for further consideration, the determination of whether such need exists for areas and communities served by the lines assigned to PRA.

separated and dealt with on their own merits, the very problems facing the producers, elevator and terminal companies, the railways, and the Federal and Provincial Governments today will become more, rather than less, severe. And much of the effort of this Commission, as well as that of the Grain Handling and Transportation Commission, will be for naught.

Resolution of Historic Subsidy Issues

The resolution of the issues which have prevented full payment of the subsidy claims filed by the railways could cause some impact on the net revenue shortfall actually incurred by the railways in 1974. From the GHTC report, it can be determined that the payments made to CP Rail, Canadian National, and Northern Alberta Railways in 1974 were 84.5 percent, 64.5 percent, and 33.7 percent of their respective claimed losses. Applying these percents to the 1974 branch line subsidy payments on the grain dependent lines provides an order of magnitude estimate of the additional funds the railways could receive in subsidy payments.

TABLE 40

Estimated Maximum Potential Increase in Subsidy Payments on Grain Dependent Lines for Year 1974

Railway	Amount (000,000)		
	1974 Payments	Ratio Payments to Claims	Estimated Maximum Increase In Subsidy
CP Rail	$23.085	.845	$ 4.235
CNR	28.473	.645	15.671
NAR	0.366	.337	0.720
TOTAL	$51.924	XXX	$20.626

Should the resolution of the outstanding issues between the CTC and the railways result in the railways receiving the total subsidy claimed, the net revenue shortfall actually experienced in 1974 would be reduced from approximately $89.3 million to approximately $68.7 million. The ratio of revenue to costs would be reduced from 1.63 to approximately 1.42.

Commission Comment

While fully aware that the following comments may be construed by some to be outside my terms of reference, I am compelled to note that present rail rate structure for

statutory grain is virtually devoid of monetary incentives for efficient use of the transportation resource and, perhaps even worse, monetary penalties for inefficient use of that resource.

The very structure of the statutory rates which provides for miniscule rate differentials for significantly longer movements must, at best, provide little or no incentive for careful and systematic selection of the primary elevator and destination port combinations that will minimize the car-miles required to transport the annual grain volume.

As noted by GHTC, the statutory and non-variable nature of the present rates offers no incentives to the shippers or their representatives to undertake capital expenditures which would permit economies of rail operation. And, in my opinion, the level of the rate offers no incentive to the railways to maintain, upgrade, or modernize the road property or equipment they provide for the transportation of statutory grain.

While I understand that there are financial incentives from other sources for the prompt unloading of cars at the export terminals, there is no such incentive in the rail rate structure. Unlike that of most other commodities,

the rate structure on statutory grain does include a provision for demurrage charges. At best, the absence of demurrage provides no additional incentive for decreasing the days the cars spend at destination.

Perhaps the most astounding aspect of the railway component of the present grain transportation and distribution system is that it operates as efficiently as it does without such monetary incentives or penalties. While I am not qualified to evaluate most of the ramifications of the GHTC rate recommendations, I believe their implementation will result in a continuance of the insignificant influence of monetary considerations on the efficient use and operation of the railway system for the carriage of statutory grain.

CHAPTER VI

PRAIRIE RAILWAY LINES - COST PROFILES

The chapter presents the cost profiles for different categories of Prairie railway lines as required by Term of Reference 3.5.

As outlined in the Terms of Reference, the objective of the cost profiles is to provide interested parties with sufficient detail so they:

> will be able to derive the order of magnitude of grain transportation costs for typical categories of line.

CATEGORIES

The Prairie railway line network used in the transportation of grain can be categorized according to a variety of factors. For example, it can be categorized according to function (i.e., secondary gathering lines, primary gathering lines, and trunk lines), carrying capacity (i.e., 177,000 lbs., 220,000 lbs., or 263,000 lbs.), use of the line by grain traffic (i.e., grain traffic density), use of the line by all traffic (i.e., total traffic density), or proximity (i.e., distance from the statutory rate destinations).

Each of these categorization variables could have an influence on the grain transportation costs incurred on a particular line or line category. For example, carloads originating on a line category most proximate to the statutory rate destinations (or primary assembly/distribution yards), probably would experience lesser total grain transportation costs than would those originating on a more distant line category. Similarly, carloads originating on lines categorized as primary gathering lines probably would experience lesser total grain transportation costs than those originating on lines categorized as secondary gathering lines.

The selection of an appropriate categorization criterion and the lines to be included in the profiles required an interpretation of the objective of Term of Reference 3.5. Thus, it had to be decided if the reference to grain transportation costs related to the total costs from origin to statutory rate destination or to only the costs incurred on the line category. Given the mandate of the Grain Handling and Transportation Commission to evaluate and recommend disposition of 6,283 miles of branch lines in the Provinces of Manitoba, Saskatchewan, and Alberta, it was my judgment that the intent of the study was to develop the transportation costs attributable to only the rail movement on the

line category--not the total movement from origin to destination. I further judged that the study's emphasis was to be placed on the costs incurred on grain gathering lines of the type investigated by the Grain Handling and Transportation Commission.

For these reasons, and also because of data availability considerations, the study base was developed from the 125 subdivisions of CP Rail (66) and Canadian National (59) which contained the 7,126.9 miles of grain dependent lines in the 1974 Prairie railway network. The subdivisions were categorized by grain traffic density. Grain traffic density was measured by the number of direct shipment statutory grain carloads originated per mile of grain dependent line. Appendix V lists the subdivisions assigned to each of the eight profile categories.

CHARACTERISTICS

As background to the cost profiles, and to provide an identification of the probable cost differences between the profile categories, an overview of the average line characteristics , car characteristics, and train characteristics by profile category and by railway within each profile category follows.

Line Characteristics

The lines in each profile category were analyzed by length and carrying capacity characteristics.

Length

The miles of line per subdivision varies from 29 miles for Category VIII to 86 miles for Category VII. As shown on Table 41, those profile categories with the lowest and highest density (i.e., Categories I and VIII) also had the lowest average miles per subdivision. While the average grain dependent miles per subdivision for all categories combined are equal on the two railways, there is substantial variation between railways in four of the eight profile categories.

TABLE 41

Prairie Railway Line Profiles
Miles of Line Per Subdivision

Profile Category	Category Average		
	CP Rail	Canadian National	CP & CN Combined
I.	32.2	28.1	30.6
II.	35.7	40.8	38.6
III.	65.0	61.1	63.3
IV.	58.0	72.4	62.6
V.	73.7	47.5	60.0
VI.	43.6	69.6	60.9
VII.	83.2	87.5	85.5
VIII.	38.0	18.0	29.4
All Categories Combined	57.1	56.9	57.0

Source: Appendix V.

Carrying Capacity

As would be expected, most of the Canadian National lines included in the data base are lines with a 177,000-pound carrying capacity. As shown by Table 42,* the light capacity lines are predominant in all density categories for Canadian National except Category I--the only category in which CP Rail has any light capacity lines.

*The percentages shown in Table 42 were derived by dividing the miles of 177,000 lb. capacity line in each category by the total miles of line in that category.

TABLE 42

Prairie Railway Line Profiles
Percent of Miles with Carrying Capacity
of 177,000 lbs.

Profile Category	Category Average		
	CP Rail	Canadian National	CP & CN Combined
I.	36.8%	35.5%	36.4%
II.	0.0	72.9	43.4
III.	0.0	89.1	36.9
IV.	0.0	90.8	33.6
V.	0.0	100.0	41.5
VI.	0.0	64.8	49.3
VII.	0.0	100.0	55.1
VIII.	0.0	100.0	26.3
All Categories Combined	1.9%	85.6%	41.3%

Source: CCTGR data base and Appendix V.

Car Characteristics

The car characteristics developed for this study included lading weight, tare weight (i.e., the weight of the cars themselves), and car days.

Lading Weight

The average load per car does not vary to any significant degree by density category. However, as anticipated, there is a difference in the average load per car originated

on each railway that is both significant and consistent among the profile categories.

TABLE 43

Prairie Railway Line Profiles
Average Load Per Car (Tons)

Profile Category	Category Average		
	CP Rail	Canadian National	CP & CN Combined
I.	59.7	54.9	57.9
II.	63.1	55.1	56.7
III.	60.9	54.7	56.3
IV.	62.6	55.9	57.1
V.	65.0	55.6	58.4
VI.	62.1	56.2	56.7
VII.	65.7	55.2	56.6
VIII.	62.0	56.3	59.3
All Categories Combined	63.5	55.6	57.1

Source: CCTGR data base

Tare Weight

The tare weight of the cars transporting the grain on the profile lines is about the same for all profile categories and for both railways.

TABLE 44

Prairie Railway Line Profiles
Tare Weight of Cars (Tons)

Profile Category	Category Average		
	CP Rail	Canadian National	CP & CN Combined
I.	21.8	22.1	21.9
II.	22.5	22.1	22.2
III.	22.2	22.2	22.2
IV.	22.4	22.2	22.1
V.	22.4	22.2	22.2
VI.	21.9	22.2	22.2
VII.	22.9	22.2	22.3
VIII.	22.3	22.4	22.4
All Categories Combined	22.2	22.2	22.2

Source: CCTGR data base

Car-Days

The available Canadian National data did not permit a determination of the average car-days incurred in either the origination or line-haul movement of a carload of grain. The CP Rail data reveals that cars originated on the lighter density line categories generally incurred a greater number of car-days at origin than did those originated on the heavier density line categories. Except for Category II lines, the line-haul movement generally consumed about eight hours per car.

TABLE 45

Prairie Railway Line Profiles
CP Rail Loaded Car-Days

Profile Category	Category Average			Total Car Days Per Car
	Origin Per Car	Enroute		
		Per Car	Per Mile	
I.	8.6	0.3	.006	8.9
II.	4.6	1.0	.014	5.6
III.	6.2	0.3	.006	6.5
IV.	4.7	0.3	.005	5.0
V.	3.7	0.4	.005	4.1
VI.	4.9	0.3	.005	5.2
VII.	3.7	0.3	.005	4.0
VIII.	4.4	0.3	.007	4.7
All Categories Combined	4.1	0.3	.006	4.4

Source: CCTGR data base

Train Characteristics

The train run data of CP Rail and Canadian National were reviewed and analyzed to develop the motive power and size characteristics of the trains that operated on the profile lines in 1974.

Diesel Units

These data show that, on average, CP Rail and Canadian National powered the trains operating on the profile

lines with 1.5 and 2.2 diesel units respectively. The average locomotive units per train did not vary substantially from the average for any of the profile categories except Category I--the trains that operated on the lines in this category had an average of only 1.1 and 1.4 diesel units per train.

TABLE 46

Prairie Railway Line Profiles
Average Diesel Units Per Train

Profile Category	Category Average		
	CP Rail	Canadian National	CP & CN Combined
I.	1.1	1.4	1.3
II.	1.3	2.2	2.0
III.	1.6	2.0	1.9
IV.	1.5	2.0	1.8
V.	1.8	2.2	2.1
VI.	1.6	2.4	2.3
VII.	1.5	2.2	1.9
VIII.	1.4	2.1	1.8
All Categories Combined	1.5	2.2	2.0

Source: CCTGR data base

Train Size

The average number of loaded and empty cars per train tends to be greater on the higher density profile categories for both railways indicating some relationship between

volume and size of the trains. Also, the average number of cars per train on lines served by Canadian National generally is greater than the average number of cars per train on lines served by CP Rail.

TABLE 47

Prairie Railway Line Profiles
Average Number of Loaded and Empty
Cars Per Train

Profile Category	Category Average		
	CP Rail	Canadian National	CP & CN Combined
I.	16.5	23.0	20.1
II.	15.7	37.0	33.6
III.	21.6	29.7	26.7
IV.	24.0	26.8	25.6
V.	35.8	45.1	43.2
VI.	36.0	47.3	45.6
VII.	28.0	26.7	27.2
VIII.	28.8	29.7	29.3
All Categories Combined	26.7	36.3	33.3

Source: CCTGR data base

Train Weight

In most instances, the average weight per train varied about the same degree among the profile categories as did the number of cars per train. Where this relationship did not hold, further research indicated that it was caused by

a difference in the proportions of loaded and empty cars in the trains. While the Canadian National trains tended to be heavier than those of CP Rail, the relative differential in train weights between the two railways was only about half the relative differential in the number of cars per train--a fact which obviously reflects the higher loading of the CP Rail cars.

TABLE 48

Prairie Railway Line Profiles
Average Train Weight

Profile Category	Category Average (Tons)		
	CP Rail	Canadian National	CP & CN Combined
I.	913	1,096	1,014
II.	861	1,538	1,430
III.	1,103	1,524	1,364
IV.	1,332	1,426	1,384
V.	2,370	2,131	2,180
VI.	1,933	2,329	2,272
VII.	1,542	1,278	1,378
VIII.	1,490	1,653	1,578
All Categories Combined	1,504	1,757	1,679

Source: CCTGR data base

VARIABLE COSTS

This section presents the 1974 line-related and volume-related costs incurred in the transportation of grain over the lines in each profile category. Due to the differences in operating characteristics between the railways and the differences in unit cost characteristics, the costs were calculated separately for each railway within each profile category.

Line-Related Costs

Appendix W hereto shows the line-related costs per mile of road for each of the profile categories. Overall, this Appendix shows the costs on CP Rail lines to be about $1,000 per mile higher than those on Canadian National lines. This difference is due to differences in capital funds costs which is caused by the use of a higher capital funds rate for CP Rail (20.80%) than for Canadian National (11.31%).*

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*See this Commission's Volume I Report, pp. 101-102 for further discussion on this matter.

TABLE 49

Prairie Railway Line Profiles
Total Line-Related Costs Per Mile

Profile Category	Category Average (Dollars Per Mile)		
	CP Rail	Canadian National	CP & CN Combined
I.	$6,002	$3,810	$5,197
II.	6,607	4,819	5,543
III.	6,247	4,926	5,701
IV.	6,287	4,977	5,802
V.	5,609	5,021	5,365
VI.	5,396	4,962	5,065
VII.	6,100	5,237	5,625
VIII.	5,303	4,732	5,153
All Categories Combined	$6,048	$4,959	$5,535

Source: Appendix W.

The roadway maintenance expenditures (including overhead) of Canadian National were about $700 more per mile than were those of CP Rail. The expenditures of both railways on the lowest density lines (i.e., Category I) are substantially less than those on the other lines. For other than the Category I lines there is no marked trend towards greater expenditures on the higher density lines.

TABLE 50

Prairie Railway Line Profiles
1974 Line-Related Roadway Maintenance
Expenditures Per Mile*

Profile Category	Category Average (Dollars Per Mile)		
	CP Rail	Canadian National	CP & CN Combined
I.	$ 350	$ 862	$ 538
II.	1,369	2,043	1,770
III.	1,259	1,885	1,518
IV.	1,889	2,431	2,089
V.	1,069	2,053	1,477
VI.	1,074	2,081	1,841
VII.	1,668	2,171	1,945
VIII.	934	2,544	1,357
All Categories Combined	$1,380	$2,084	1,711

*Includes roadway maintenance and overhead.

Source: Appendix W

In 1974, this Commission found that the average line-related normalized roadway maintenance costs including overheads was $3,171 per mile for Canadian National and $3,550 per mile for CP Rail. Comparing the expenditures for each category shown in Table 50 with the average normalized maintenance costs reveals that the CP Rail maintained its lines in only one profile category at more than 50 percent of the maintenance requirement. On the other

hand, Canadian National maintained its lines at more than 50 percent of the maintenance requirement in seven of the eight profile categories.

TABLE 51

Prairie Railway Line Profiles
Percent of Actual Expenditures to
Normalized Maintenance Requirement

Profile Category	Category Average	
	CP Rail	Canadian National
I.	9.9%	27.2%
II.	38.6	64.4
III.	35.5	59.4
IV.	53.2	76.7
V.	30.1	64.7
VI.	30.3	65.6
VII.	47.0	68.5
VIII.	26.3	80.2
All Categories Combined	38.9	65.7

The line-related costs dramatically display the impact of volume on the per car costs incurred by the railways in grain transportation. Given that the profile lines, by definition, are dependent upon grain for their continued existence, some idea of the effect of volume can be obtained by dividing the average line-related costs per mile of roadway (Table 49) by the average number of grain car loads per mile of roadway (Appendix V). Table 52 displays the results of this calculation.

TABLE 52

Prairie Railway Line Profiles
Total Line-Related Costs Per
Statutory Grain Car Originated

Profile Category	Category Average		
	CP Rail	Canadian National	CP & CN Combined
I.	$2,223	$1,229	$1,792
II.	816	574	668
III.	521	379	460
IV.	368	275	332
V.	245	222	235
VI.	196	184	187
VII.	173	150	161
VIII.	104	108	105
All Categories Combined	$ 301	$ 233	$ 267

Volume-Related Costs

The volume-related costs are influenced by several factors including the characteristics of the train in which the cars are transported, the miles of haul of both the cars and the trains, the tare weight of the cars, the weight of the lading and the car-days at origin and enroute. In order to eliminate the influence of mileage differences among the profile categories a model was developed which assumed the following conditions for each profile category:

- A loaded haul of 50 miles per car.
- A train run of 100 miles in each direction.
- A 100 percent return of the empty cars.

In essence the volume-related costs for each profile category are predicated on a movement of 100 car-miles (50 loaded car-miles and 50 empty car-miles) for a carload of grain that originated at the mid-point of a 100-mile subdivision that was served by a train run of 100 miles in each direction. The train and car characteristics for each profile category described supra were applied to this standard model to develop the train-related and car-related* output units per carload.

The 1974 unit costs this Commission found appropriate for costing of grain traffic transported in box cars were then applied to the output units to develop the total volume-related variable costs per carload. Appendix X hereto displays the volume-related, variable costs per carload for each profile category. In reviewing this Appendix, it should be noted that the operating expenses attributed to freight car operations includes several cost elements (e.g., car cleaning and grain doors) that are related to carloads rather than

*Due to the lack of car day data for Canadian National, the CP Rail average days per car at origin for each profile category was used for Canadian National shipments.

car-miles and car-days. The volume-related costs are summarized in Table 53.

TABLE 53

Prairie Railway Line Profiles
Volume Related, Variable Costs
Per Carload

Profile Category	Category Average		
	CP Rail	Canadian National	CP & CN Combined
I.	$130.65	$89.30	$114.17
II.	130.35	79.44	99.75
III.	120.72	80.48	103.22
IV.	109.56	79.75	98.14
V.	97.47	69.94	86.11
VI.	101.06	71.04	78.32
VII.	105.36	81.44	92.25
VIII.	107.08	76.47	99.90
All Categories Combined	$103.45	$74.34	$ 89.31

Source: Appendix X

The substantial difference in costs per carload between CP Rail and Canadian National shown in Table 53 are, for the most part, caused by the difference in the capital funds rate used for each railway and the heavier loading of the CP Rail cars. Table 54 displays the variable, volume-related costs per ton, excluding capital funds costs, for each profile category and shows that the overall average difference per ton is only 17.0 cents.

TABLE 54

Prairie Railway Line Profiles
Operating Expenses and Depreciation
Per Ton

Profile Category	Category Average	
	CP Rail	Canadian National
I.	$1.82	$1.46
II.	1.75	1.30
III.	1.67	1.33
IV.	1.48	1.30
V.	1.28	1.15
VI.	1.37	1.15
VII.	1.37	1.35
VIII.	1.47	1.23
Average All Categories	$1.39	$1.22

Source: Appendix X and Table 43.

Summary

Table 55 presents a summary of the 1974 variable costs per ton by profile category and by railway. For purposes of this summary table, the volume-related, variable costs shown in Appendix X were divided into those that are predominantly mileage-related and those that are predominantly related to carloads. This latter category includes all of the operating costs listed under the carload sub-category plus the car cleaning and grain door costs listed under the freight car operations sub-category. The line-related costs per car originated (Table 52) and the

volume-related cost per carload (Appendix X) for each profile category were divided by the average load per car for each profile category (Table 43) to develop the costs per ton.

TABLE 55

Prairie Railway Line Profiles
Average Variable Cost Per Ton

Profile Catergory	Category Average			
	Line-Related	Volume-Related		Total
		Mileage	Carload	
CP Rail				
I.	$37.24	$1.39	$ .80	$39.43
II.	12.93	1.31	.76	15.00
III.	8.56	1.20	.78	10.54
IV.	5.88	.99	.76	7.63
V.	3.77	.77	.73	5.27
VI.	3.16	.86	.77	4.79
VII.	2.63	.88	.73	4.24
VIII.	1.68	.96	.77	3.41
All Categories Combined	$ 4.74	$ .88	$ .75	$ 6.37
Canadian National				
I.	$22.39	$1.13	$ .49	$24.01
II.	10.42	.95	.49	11.86
III.	6.93	.98	.49	8.40
IV.	4.92	.94	.49	6.35
V.	3.99	.77	.49	5.25
VI.	3.27	.78	.48	4.53
VII.	2.72	.98	.49	4.19
VIII.	1.92	.88	.48	3.28
All Categories Combined	$ 4.19	$ .85	$ .49	$ 5.53

Source: Tables 43 & 52 and Appendix X.

The data in Table 55 reveal two significant features of the costs incurred on the grain dependent lines. The first is that the line-related costs constitute the most significant cost element (see Table 56, following page).

Second, there is considerable difference in the variation of the cost components among the profile categories. The line-related costs per measurement unit (i.e., tons) have a direct and inverse relationship to density. However, the volume-related carload costs have virtually no relationship to density. And, the volume-related mileage costs have some relationship to density. Due to the relative magnitude of the line-related costs, the total variable costs also have a direct and inverse relationship to density. These different relationships to density are displayed by Table 56 (page 182) which shows the ratio of the costs per ton for each profile category to the costs per ton for all profile categories combined.

TABLE 56

Prairie Railway Line Profiles
Distribution of the Average Variable Costs Per Ton

Profile Catergory	Distribution of Variable Costs Per Ton			
	Line-Related	Volume-Related		Total
		Mileage	Carload	
CP Rail				
I.	94.4%	3.5%	2.1%	100.0%
II.	86.2	8.7	5.1	100.0
III.	81.2	11.4	7.4	100.0
IV.	77.0	13.0	10.0	100.0
V.	71.5	14.6	13.9	100.0
VI.	66.0	18.0	16.0	100.0
VII.	62.0	20.8	17.2	100.0
VIII.	49.3	28.2	22.5	100.0
All Categories Combined	74.4%	13.8%	11.8%	100.0%
Canadian National				
I.	93.3%	4.7%	2.0%	100.0%
II.	87.9	8.0	4.1	100.0
III.	82.5	11.7	5.8	100.0
IV.	77.5	14.8	7.7	100.0
V.	76.0	14.7	9.3	100.0
VI.	72.2	17.2	10.6	100.0
VII.	64.9	23.4	11.7	100.0
VIII.	58.6	26.8	14.6	100.0
All Categories Combined	75.8%	15.4%	8.8%	100.0%

Source: Table 55.

TABLE 57

Prairie Railway Line Profiles
Variation in Variable Costs
Per Ton Among Profile Category

Profile Catergory	Ratio: Individual Category to All Categories Combined			
	Line-Related	Volume-Related		Total
		Mileage	Carload	
CP Rail				
I.	7.86	1.58	1.07	6.19
II.	2.73	1.49	1.01	2.35
III.	1.81	1.36	1.04	1.65
IV.	1.24	1.13	1.01	1.20
V.	.80	.88	.97	.83
VI.	.67	.98	1.03	.75
VII.	.55	1.00	.97	.67
VIII.	.35	1.09	1.03	.54
All Categories Combined	1.00	1.00	1.00	1.00
Canadian National				
I.	5.34	1.33	1.00	4.34
II.	2.49	1.12	1.00	2.14
III.	1.65	1.15	1.00	1.52
IV.	1.17	1.11	1.00	1.15
V.	.95	.91	1.00	.95
VI.	.78	.92	.98	.82
VII.	.65	1.15	1.00	.76
VIII.	.46	1.04	.98	.59
All Categories Combined	1.00	1.00	1.00	1.00

Source: Table 55

The features of the Prairie railway line profiles displayed above lead to two conclusions relative to system rationalization. Rationalization of the Prairie branch line network will result in a greater concentration (i.e., greater grain density) for the lines that will remain in the network. As shown above, the line-related costs per measurement unit are extremely sensitive to changes in density. Thus, line abandonment will cause a significant reduction in the line-related costs per carload and per ton--particularly if the grain dependent lines retained in the system experience an increase in density as a result. Conversely, the volume-related costs are not nearly as sensitive to changes in density. This leads to the conclusion that they should not be afforded much weight in determining which lines should be retained in the system. These conclusions, in turn, lead to the more generalized conclusion that the historical costs of providing service on individual lines or line categories are not of particular significance in the rationalization process.

ALL OF WHICH I RESPECTFULLY SUBMIT FOR YOUR EXCELLENCY'S CONSIDERATION

Commissioner

APPENDICES

Summary of 1974 Revenues Received and Variable Costs Incurred by CP Rail and Canadian National for the Transportation of Statutory Grain

Item	Amount (Dollars Shown in 000)			Revenue/Cost Per Carload Terminated
	CP Rail	Canadian National	Total	
Revenues				
Statutory Rates	$ 46,051	$ 41,997	$ 88,048	$261.42
Branch Line Subsidy - Grain Dependent Lines	23,085	28,473	51,558	153.08
Miscellaneous - Grain Dependent Lines	114	171	285	0.85
Miscellaneous - Other	42	52	94	0.28
Total Revenues	$ 69,292	$ 70,693	$139,985	$415.62
Total Revenues Excluding Branch Line Subsidy	46,207	42,220	88,427	262.54
Variable Costs				
Line-Related Costs - Grain Dependent Lines	$ 31,666	$ 20,881	$ 52,547	$156.01
Volume-Related Costs				
Running Track and Roadway Property				
Grain Dependent Lines	$ 1,591	$ 1,327	$ 2,918	$ 8.66
Other Lines	12,721	11,008	23,729	70.45
Total	14,312	12,335	26,647	79.12
Yard Track and Roadway Property	1,811	2,004	3,815	11.33
Train Operations	31,746	34,288	66,034	196.06
Yard Operations	5,713	6,996	12,709	37.73
Freight Car Operations	26,354	22,468	48,822	144.95
Other Cost Elements*	8,028	4,160	12,188	36.19
Transit Traffic Costs	2,903	1,850	4,753	14.16
Total Volume-Related Costs	90,867	84,101	174,968	519.48
Total Variable Costs	$122,533	$104,982	$227,515	$675.49
Cost/Revenue Ratios				
To Total Revenues				
Total Variable Costs	1.77	1.49	1.63	
Total Volume-Related Costs	1.31	1.19	1.25	
To Revenues Received from Users				
Total Variable Costs	2.65	2.49	2.57	
Total Volume-Related Costs	1.97	1.99	1.98	
To Statutory Rate Revenues				
Total Variable Costs	2.66	2.50	2.58	
Total Volume-Related Costs	1.97	2.00	1.99	

* Includes depreciation and capital funds cost for signals and communications.

Source: Columns 2-4, CCTGR Report Volume I, Appendices E, F, K, M, and D.
Column 5 - Total Revenue or Variable Costs (Column 4) divided by 336,813 Total Direct Shipment and Transit Carloads from CCTGR Report Volume I, Appendix D.

Summary of Car and Train Output Units
Incurred by CP Rail and Canadian National in the
Transportation of Direct Shipment Statutory Grain

Item	1974 Output Units			
	CP Rail		Canadian National	
	Total	Per Carload Terminated	Total	Per Carload Terminated
Car-Related Output Units				
Carloads Terminated	160,431	xxxx	166,104	xxxx
Carloads in Box Cars	138,745	0.86	152,235	0.92
Carloads Requiring Grain Doors	132,722	0.83	152,235	0.92
Car-Days (Loaded & Empty Cars)	3,679,210	22.9	3,775,531	22.7
Loaded Car-Miles	137,379,406	856.3	151,776,684*	913.7
Empty Car-Miles	113,626,524	708.3	121,791,461*	733.2
Total Car-Miles	251,005,930	1564.6	273,568,145	1647.0
Tons Carried	10,460,373	65.2	9,603,906	57.8
Net-Ton-Miles (Contents)	8,992,224,000	56,050	8,794,106,000	52,943
Gross-Ton-Miles (Cars & Contents)	14,746,743,000	91,920	15,047,394,000	90,590
Switching Minutes (Train Locomotives)	624,037	3.89	810,654	4.88
Swtiching Minutes (Yard Locomotives)	5,228,619	32.59	6,000,745	36.13
Switching Minutes (Total)	5,852,656	36.48	6,811,399	41.01
Train-Related Output Units				
Train Miles	2,937,917	18.3	3,956,276	23.8
Train Hours	133,896	0.83	**	**
Crew Wages ($)	6,172,139	38.47	7,897,190	47.54
Diesel Unit Miles	8,124,661	50.64	8,515,699	51.27
Gallons of Fuel	23,365,495	145.64	22,796,803	137.24

*Computed from total car mile and average empty ratio data shown in source document.

**Train Hour data is not maintained by Canadian National.

Source: Report Volume I, Appendix E, pages 1 and 2 for Canadian National and page 3 for CP Rail.

Canadian National Carloads and Tons Originated by Subdivision
1974 Actual vs. 1974 Rationalized

Subdivision	No. of Carloads			No. of Tons		
	1974 Actual	Rationalized	Difference	1974 Actual	Rationalized	Difference
I. Subdivisions With No Change In Traffic						
Acadia Valley	560	560	0	32,364	32,364	0
Arborfield	428	428	0	23,258	23,258	0
Assiniboine	895	895	0	48,311	48,311	0
Athabasca	1,078	1,078	0	58,326	58,326	0
Bengough	1,620	1,620	0	91,973	91,973	0
Bodo	1,380	1,380	0	78,066	78,066	0
Bonnyville	516	516	0	27,737	27,737	0
Cabot	4	4	0	231	231	0
Central Butte	465	465	0	25,808	25,808	0
Chelan	804	804	0	43,708	43,708	0
Conquest	2,357	2,357	0	132,610	132,610	0
Corning	485	485	0	27,086	27,086	0
Coronado	1,637	1,637	0	90,144	90,144	0
Cowan	681	681	0	36,684	36,684	0
Craik	3,646	3,646	0	270,714	270,714	0
Cromer	2,526	2,526	0	145,191	145,191	0
Edmonton*	8,005	8,005	0	483,119	483,119	0
Edson	431	431	0	23,435	23,435	0
Endiang	524	524	0	29,795	29,795	0
Fort Frances	5	5	0	254	254	0
Glenavon	2,329	2,329	0	131,038	131,038	0
Grande Cache*	277	277	0	15,422	15,422	0
Herchmer	1	1	0	50	50	0
Kashabowie	23	23	0	1,448	1,448	0
Lampman	1,805	1,805	0	101,100	101,100	0
Letellier	1,651	1,651	0	92,930	92,930	0
Lewvan	4,231	4,231	0	236,999	236,999	0
Manning	1,198	1,198	0	65,981	65,981	0
Mantario	1,828	1,828	0	103,387	103,387	0
Margo	5,434	5,434	0	318,390	318,390	0
Northgate	336	336	0	19,013	19,013	0
Oak Point	569	569	0	31,626	31,626	0
Oakland	571	571	0	32,719	32,719	0
Paddockwood	571	571	0	31,080	31,080	0
Pine Falls	120	120	0	6,820	6,820	0
Porter	433	433	0	23,926	23,926	0
Preeceville	3,784	3,784	0	205,307	205,307	0
Quappelle	2,351	2,351	0	132,082	132,082	0
Regina Terminal	153	153	0	8,704	8,704	0
Rhein	758	758	0	40,573	40,573	0
Ridgeville	201	201	0	11,177	11,177	0
Sangudo	337	337	0	18,013	18,013	0
Sheerness	48	48	0	2,762	2,762	0
Sprague	306	306	0	16,992	16,992	0
Ste. Rose	280	280	0	15,402	15,402	0
Steep Rock	1	1	0	50	50	0
Thicket	1	1	0	62	62	0
Three Hills	3,116	3,116	0	183,638	183,638	0
Togo	3,279	3,279	0	200,708	200,708	0
Wekusko	128	128	0	6,760	6,760	0
Winnipeg Terminal	317	317	0	18,047	18,047	0
Winnipegosis	273	273	0	14,634	14,634	0
Yale	1	1	0	48	48	0
Total Group I	64,758	64,758	0	3,755,702	3,755,702	0

*Includes NAR traffic received at Edmonton (5,941 cars, 328,572 tons) and at Grande Cache (258 cars, 14,364 tons).

Canadian National Carloads and Tons Originated by Subdivision
1974 Actual vs. 1974 Rationalized

Subdivision	No. of Carloads			No. of Tons		
	1974 Actual	Rationalized	Difference	1974 Actual	Rationalized	Difference
II. Subdivisions With Traffic Increases						
CN Subdivisions						
Aberdeen	1,721	1,827	106	94,409	100,230	5,821
Alliance	1,852	1,914	62	104,359	107,856	3,497
Avonlea	2,386	2,527	141	136,772	144,639	7,867
Battleford	435	460	25	24,577	25,970	1,393
Big River	577	660	83	31,316	35,674	4,358
Blackfoot	4,544	4,836	292	260,832	278,478	17,646
Blaine Lake	3,603	3,727	124	196,964	203,724	6,760
Bolney	393	430	37	21,705	23,947	2,242
Brazeau	671	833	162	35,996	45,538	9,542
Brooksby	1,166	1,263	97	63,245	69,172	5,927
Camrose	1,022	1,213	191	59,592	70,364	10,772
Cudworth	1,882	1,991	109	102,656	108,740	6,084
Demay	196	216	20	10,670	11,708	1,038
Drumheller	3,235	3,245	10	196,901	197,539	638
Duck Lake	1,337	1,659	322	75,346	93,056	17,710
Elrose	4,759	5,084	325	263,890	283,682	19,792
Gladstone	1,426	1,648	222	80,073	92,436	12,363
Hartney	1,603	1,730	127	89,632	97,323	7,691
Langham	2,301	2,614	313	130,956	149,001	18,045
Miami	1,485	1,644	159	83,697	92,598	8,901
Oyen	3,740	4,072	332	245,330	264,128	18,798
Rivers	3,678	4,748	1,070	210,090	274,131	64,041
Robinhood	1,268	1,344	76	67,697	72,190	4,493
Rosetown	4,133	4,493	360	248,227	269,904	21,677
Rossburn	1,725	1,796	71	93,629	97,599	3,970
St. Brieux	1,263	1,286	23	69,908	71,208	1,300
Tisdale	3,269	4,287	1,018	178,329	236,979	58,650
Turtleford	2,489	2,668	179	135,006	144,943	9,937
Vegreville	2,651	2,856	205	150,760	162,893	12,133
Wainwright	6,185	6,333	148	373,638	382,035	8,397
Watrous	9,705	10,085	380	636,716	658,936	22,220
Weyburn	1,226	1,243	17	69,863	70,818	955
Yorkton	565	734	169	31,978	41,341	9,363
Sub-Total	78,491	85,466	6,975	4,574,759	4,978,780	404,021
Subdivisions Transferred From CP Rail to Canadian National						
Lenore	0	520	520	0	31,737	31,737
Meadow Lake	0	909	909	0	55,110	55,110
Colonsay	0	1,932	1,932	0	118,818	118,818
Matador	0	971*	971	0	59,900*	59,900
Miniota	0	751**	751	0	45,028**	45,028
Russell	0	456	456	0	27,905	27,905
Sub-Total	0	5,539	5,539	0	338,498	338,498
Total Group II	78,491	91,005	12,514	4,574,759	5,317,278	742,519

*Includes 174 cars and 9,792 tons transferred from the CN White Bear subdivision.

**Includes 187 cars and 10,251 tons transferred from the CN Rapid City subdivision.

Canadian National Carloads and Tons Originated by Subdivision
1974 Actual vs. 1974 Rationalized

Subdivision	No. of Carloads			No. of Tons		
	1974 Actual	Rationalized	Difference	1974 Actual	Rationalized	Difference
III. Subdivisions With Traffic Decreases						
Amiens	695	588	(107)	36,495	30,807	(5,688)
Carman	2,934	2,898	(36)	164,101	162,052	(2,049)
Erwood	1,661	1,323	(338)	90,127	71,839	(18,288)
Stettler	1,883	1,630	(253)	106,157	91,932	(14,225)
Tonkin	1,353	745	(608)	74,912	41,273	(33,639)
White Bear	1,238	1,064	(174)	69,589	59,797	(9,792)
Total Group III	9,764	8,248	(1,516)	541,381	457,700	(83,681)
IV. Subdivisions Abandoned or Transferred						
Subdivisions Abandoned						
Carberry	76	0	(76)	4,404	0	(4,404)
Carlton	610	0	(610)	33,555	0	(33,555)
Central Butte	395	0	(395)	21,931	0	(21,931)
Cut Knife	35	0	(35)	1,948	0	(1,948)
Dodsland	1,189	0	(1,189)	67,306	0	(67,306)
Goodwater	329	0	(329)	18,421	0	(18,421)
Gravelbourg	411	0	(411)	23,139	0	(23,139)
Haight	70	0	(70)	3,826	0	(3,826)
Hatherleigh	148	0	(148)	8,248	0	(8,248)
Inwood	216	0	(216)	12,052	0	(12,052)
Kingman	29	0	(29)	1,506	0	(1,506)
Main Centre	472	0	(472)	26,199	0	(26,199)
Meskanaw	657	0	(657)	36,251	0	(36,251)
Neepawa	561	0	(561)	31,452	0	(31,452)
Notre Dame	114	0	(114)	5,956	0	(5,956)
Pleasant Point	140	0	(140)	7,616	0	(7,616)
Rapid City	1,102	0	(1,102)	60,258	0	(60,258)
Wakopa	298	0	(298)	17,066	0	(17,066)
Wawanesa	437	0	(437)	24,209	0	(24,209)
Sub-Total	7,289	0	(7,289)	405,343	0	(405,343)
Subdivisions Transferred to CP Rail						
Central Butte	647	0	(647)	35,933	0	(35,933)
Dodsland	1,686	0	(1,686)	95,428	0	(95,428)
Gravelbourg	3,003	0	(3,003)	169,069	0	(169,069)
Riverhurst	466	0	(466)	26,291	0	(26,291)
Sub-Total	5,802	0	(5,802)	326,721	0	(326,721)
Total Group IV	13,091	0	(13,091)	732,064	0	(732,064)
GRAND TOTAL ALL GROUPS	166,104	164,011	(2,093)	9,603,906	9,530,680	(73,226)

CP Rail Carloads and Tons Originated by Subdivision
1974 Actual vs. 1974 Rationalized

Subdivision	No. of Carloads			No. of Tons		
	1974 Actual	Rationalized	Difference	1974 Actual	Rationalized	Difference
I. Subdivisions With No Change In Traffic						
Acme	313	313	0	18,940	18,940	0
Aldersyde	2,418	2,418	0	157,917	157,917	0
Altawan	1,298	1,298	0	81,431	81,431	0
Bassano	789	789	0	50,006	50,006	0
Bulyea	3,705	3,705	0	231,418	231,418	0
Burstall	1,860	1,860	0	121,519	121,519	0
Calgary Terminals	434	434	0	26,638	26,638	0
Coutts	560	560	0	38,752	38,752	0
Crowsnest	377	377	0	26,403	26,403	0
Dunelm	467	467	0	28,936	28,936	0
Emerson	1,325	1,325	0	80,191	80,191	0
Furness	605	605	0	35,266	35,266	0
Gretna	901	901	0	51,263	51,263	0
Hardisty	3,512	3,512	0	231,101	231,101	0
Hatton	241	241	0	15,445	15,445	0
Hoadley	693	693	0	41,241	41,241	0
Indian Head	3,795	3,795	0	265,312	265,312	0
Keewatin	188	188	0	11,680	11,680	0
Kisbey	1,124	1,124	0	68,793	68,793	0
Lac Du Bonnet	353	353	0	21,646	21,646	0
Lacombe	1,031	1,031	0	63,213	63,213	0
Lanigan	2,571	2,571	0	169,283	169,283	0
Leduc*	5,059	5,059	0	296,312	296,312	0
Lloydminster	3,193	3,193	0	194,554	194,554	0
Lomond	946	946	0	59,413	59,413	0
Macklin	2,617	2,617	0	164,586	164,586	0
Macleod	1,328	1,328	0	87,957	87,957	0
Maple Creek	1,555	1,555	0	107,134	107,134	0
Nelson	41	41	0	2,573	2,573	0
Notukeu	2,094	2,094	0	130,357	130,357	0
Okanagan	7	7	0	441	441	0
Pennant	572	572	0	35,309	35,309	0
Reford	828	828	0	51,817	51,817	0
Shaunavon	4,577	4,577	0	374,598	374,598	0
Stirling	4,039	4,039	0	342,629	342,629	0
Taber	1,634	1,634	0	110,117	110,117	0
Turin	460	460	0	29,011	29,011	0
Tyvan	2,780	2,780	0	176,916	176,916	0
Vanguard	1,782	1,782	0	110,713	110,713	0
Winnipeg Beach	289	289	0	16,896	16,896	0
Winnipeg Terminal	931	931	0	53,472	53,472	0
Wishart	772	772	0	47,056	47,056	0
Total Group I	64,064	64,064	0	4,228,255	4,228,255	0

*Includes NAR traffic received at Edmonton (4,239 cars, 248,304 tons).

CP Rail Carloads and Tons Originated by Subdivision
1974 Actual vs. 1974 Rationalized

Subdivision	No. of Carloads			No. of Tons		
	1974 Actual	Rationalized	Difference	1974 Actual	Rationalized	Difference
II. Subdivisions With Traffic Increases						
CP Rail Subdivisions						
Amulet	733	819	86	45,579	50,871	5,292
Arborg	876	1,072	196	51,557	63,610	12,053
Arcola	2,236	2,750	514	135,877	167,559	31,682
Assiniboia	2,189	2,190	1	139,187	139,244	57
Bredenbury	2,976	3,611	635	187,335	226,508	39,173
Broadview	3,095	3,212	117	209,065	216,284	7,219
Bromhead	2,456	2,685	229	155,597	169,709	14,112
Brooks	1,201	1,379	178	80,380	91,634	11,254
Carberry	1,190	1,292	102	77,037	83,356	6,319
Cardston	568	626	58	35,448	39,125	3,677
Coronation	1,817	2,068	251	115,421	130,929	15,508
Empress	3,165	3,298	133	202,961	211,008	8,047
Estevan	4,687	5,274	587	304,570	340,513	35,943
Expanse	916	1,057	141	73,792	82,519	8,727
Fife Lake	1,811	1,949	138	113,436	121,951	8,515
Glenboro	2,943	3,464	521	187,002	219,157	32,155
Irricana	1,158	1,172	14	73,568	74,461	893
Kelfield	679	722	43	40,796	43,456	2,660
Kerrobert	3,369	3,773	404	206,967	231,787	24,820
La Riviere	2,495	2,737	242	152,631	166,885	14,254
Langdon	1,144	1,224	80	73,394	78,498	5,104
Minnedosa	668	1,076	408	42,804	67,991	25,187
Napinka	3,868	4,195	327	237,475	257,343	19,868
Neudorf	2,361	2,364	3	145,917	146,081	164
Outlook	2,870	3,180	310	227,002	246,150	19,148
Portal	5,022	5,078	56	364,964	368,436	3,472
Prince Albert	981	1,153	172	59,483	70,081	10,598
Red Deer	2,433	2,617	184	157,129	168,162	11,033
Shamrock	1,486	1,502	16	92,982	93,995	1,013
Suffield	1,032	1,052	20	65,956	67,196	1,240
Sutherland	2,484	2,504	20	150,074	151,330	1,256
Swift Current	4,318	4,987	669	353,728	394,740	41,012
Tisdale	2,506	2,530	24	148,427	149,893	1,466
Wetaskiwin	1,768	1,776	8	110,603	111,070	467
White Fox	780	782	2	45,954	46,076	122
Wilkie	639	908	269	44,469	60,735	16,266
Willingdon	2,133	2,174	41	125,954	128,455	2,501
Wood Mountain	2,398	2,454	56	150,487	153,942	3,455
Wynyard	2,692	2,961	269	177,215	193,835	16,620
Sub-Total	82,143	89,667	7,524	5,362,223	5,824,575	462,352
Subdivisions Transferred From Canadian National to CP Rail						
Gravelbourg	0	2,740	2,740	0	169,069	169,069
Dodsland	0	1,547	1,547	0	95,428	95,428
Riverhurst & Central Butte	0	1,008	1,008	0	62,224	62,224
Sub-Total	0	5,295	5,295	0	326,721	326,721
Total Group II	82,143	94,962	12,819	5,362,223	6,151,296	789,073

CP Rail Carloads and Tons Originated by Subdivision
1974 Actual vs. 1974 Rationalized

Subdivision	No. of Carloads			No. of Tons		
	1974 Actual	Rationalized	Difference	1974 Actual	Rationalized	Difference
III. Subdivisions With Traffic Decreases						
Carman	228	169	(59)	13,233	10,007	(3,226)
Melfort	1,879	1,280	(599)	114,810	78,208	(36,602)
Strathmore	461	305	(156)	29,119	19,276	(9,843)
Lyleton	965	767	(198)	58,610	46,557	(12,053)
Total Group III	3,533	2,521	(1,012)	215,772	154,048	(61,724)
IV. Subdivisions Abandoned or Transferred						
Subdivisions Abandoned						
Alberta Central	168	0	(168)	9,892	0	(9,892)
Alida	883	0	(883)	54,379	0	(54,379)
Asquith	481	0	(481)	28,987	0	(28,987)
Big Gully	319	0	(319)	19,345	0	(19,345)
Boissevain	212	0	(212)	12,841	0	(12,841)
Cassils	25	0	(25)	1,550	0	(1,550)
Colony	194	0	(194)	11,976	0	(11,976)
Colonsay	16	0	(16)	988	0	(988)
Crossfield	178	0	(178)	10,677	0	(10,677)
Cut Knife	0	0	0	0	0	0
McMorran	546	0	(546)	33,250	0	(33,250)
Medstead	78	0	(78)	4,413	0	(4,413)
Miniota	583	0	(583)	35,948	0	(35,948)
Rosemary	122	0	(122)	7,783	0	(7,783)
Rosetown	348	0	(348)	20,695	0	(20,695)
Snowflake	272	0	(272)	16,100	0	(16,100)
Stewart Valley	332	0	(332)	20,088	0	(20,088)
Varcoe	470	0	(470)	29,191	0	(29,191)
Vegreville	187	0	(187)	11,405	0	(11,405)
Whitkow	41	0	(41)	2,485	0	(2,485)
Woolford	58	0	(58)	3,675	0	(3,675)
Sub-Total	5,513	0	(5,513)	335,668	0	(335,668)
Subdivisions Transferred From CP Rail to Canadian National						
Colonsay	1,932	0	(1,932)	118,818	0	(118,818)
Lenore	520	0	(520)	31,737	0	(31,737)
Matador	797	0	(797)	50,108	0	(50,108)
Meadow Lake	909	0	(909)	55,110	0	(55,110)
Miniota	564	0	(564)	34,777	0	(34,777)
Russell	456	0	(456)	27,905	0	(27,905)
Sub-Total	5,178	0	(5,178)	318,455	0	(318,455)
Total Group IV	10,691	0	(10,691)	654,123	0	(654,123)
GRAND TOTAL ALL GROUPS	160,431	161,547	1,116	10,460,373	10,533,599	73,226

Comparison of 1974 Car and Train Output Units of CP Rail and Canadian National

Item	CP Rail	Canadian National	Percentage Difference (CN/CP)
Percent of Carloads in Box Cars	86.0%	92.0%	7.0%
Car Days Per Shipment (Car Cycle)	22.9	22.7	(0.9)
Loaded Car-Miles Per Shipment	856.3	913.8	6.7
Total Car-Miles Per Shipment	1564.6	1647.0	5.5
Total Car-Miles Per Car Day (Loaded & Empty Cars)	68.2	72.5	6.3
Empty Return Ratio	82.7%	80.2%	(3.1)
Average Load Per Car-Tons	65.2	57.8	(12.8)
Weighted Average Tare Weight Per Car-Tons*	22.9	22.9	0.0
Switching Minutes Per Car	36.5	41.0	12.3
Average Train Speed (MPH)	21.9	Not Available	xxx
Diesel Unit Miles Per Thousand Gross-Ton-Miles	0.55	0.57	3.6
Gallons of Fuel Per Thousand Gross-Ton-Miles	1.58	1.52	(3.9)

*Weighted by miles

Statement Showing 1974 Traffic Routes that Would be Eliminated Under the Rationalization Proposal		
Railway/Subdivision	1974 Route(s)	Changes Caused by Rationalization
CP Rail		
Shamrock	88% of the cars to Thunder Bay and 37% of the cars to Vancouver were routed via the Expanse subdivision to Moose Jaw	Abandonment of the Courval to Archive segment of line requires cars destined to Thunder Bay to be routed via Swift Current or via Assiniboia and cars destined to Vancouver to be routed via Swift Current. The Swift Current routing was selected for both destinations.
Suffield	All cars to Thunder Bay were routed via the Brooks subdivision to Medicine Hat	Abandonment of the Hays to Suffield segment of the line requires all Thunder Bay cars to be routed westward over the Lomond subdivision. The new routing to Thunder Bay was assumed to be the same as for cars originating on the Lomond subdivision.
Strathmore	44% of the cars to Thunder Bay were routed via Gleichen on the Brooks subdivision and the balance routed via Calgary	Abandonment of the Strathmore to Gleichen segment of the line requires that all cars be routed via Calgary.
Canadian National		
Hartney	All eastbound and westbound cars were routed via Scarth on the Cromer subdivision	Abandonment of the Elgin to Scarth portion of the line requires that all eastbound and westbound traffic be routed via Morris on the Letellier subdivision.
Rossburn	All eastbound and westbound movements off the Rossburn and Neepawa subdivisions were routed via the Neepawa subdivision and the Gladstone subdivision to Portage La Prairie	Abandonment of the subdivision from Neepawa to Muir eliminates this route. All traffic routed via CP Rail (trackage rights) to Portage La Prairie.

Statement Showing 1974 Traffic Routes that Would be Eliminated Under the Rationalization Proposal		
Railway/Subdivision	1974 Route(s)	Changes Caused by Rationalization
Erwood	All westbound traffic was routed through Hudson Bay to Humbolt via the Assinboine and Margo subdivisions	Abandonment of the Hudson Bay to Baden portion of the line requires that all westbound traffic be routed via the Preeceville subdivision at Swan River and thence via the Assinboine and Margo subdivisions to Humbolt.
Bengough	All traffic was routed via the Avonlea subdivision to Moose Jaw	Abandonment of the Radville to Parry segment of the Avonlea subdivision requires that all traffic be routed via the Weyburn and Lewvan subdivisions to Regina.
Robinhood and Amiens	All traffic originating on the Amiens subdivision and eastbound traffic originating on the Robinhood subdivision moved via Prince Albert; westbound traffic originating on the Robinhood subdivision moved via Turtleford	The abandonment of segments of the Amiens and Robinhood subdivisions and the entire Hatherleigh subdivision required that all traffic be routed via Speers on the Blaine Lake subdivision thence Prince Albert for eastbound traffic and North Battleford for westbound traffic.
Endiang and	All westbound traffic from both subdivisions moved via Camrose on the Camrose subdivision	The abandonment of the Nevis to Bylmoor segment of the Endiang subdivision and the Stettler to Ferlow Junction segment of the Stettler subdivision required that all westbound traffic be routed via the Drumheller, Three Hills, and Camrose subdivisions.
Tonkin	All eastbound traffic to the Lakehead routed via Melville over the Yorkton subdivision, to Churchill via Canora over the Rhein subdivision; all westbound traffic routed via Melville over the Yorkton subdivision	The abandonment of the Yorkton to Wroxton segment of the subdivision required that all traffic on the remaining portion (MacNutt to to Wroxton) be routed via the Rhein and Togo subdivisions to Canora.

Statement Showing Traffic Routes Used to Develop Output Units for Subdivisions Transferred Between CN and CP	
Subdivision	Traffic Routes
Subdivisions Transferred to CP Gravelbourg	Traffic originating at stations on the line segment between Mossbank and Gravelbourg was routed via Mossbank on the Expanse subdivision and assumed to take the same routing as does traffic originating at Mossbank. Traffic originating at stations on the line segment between Hodgeville and Tyson is all routed via Tyson on the Shamrock subdivision. All traffic was assumed to take the same routing as does traffic originating at Vogel on the Shamrock subdivision.
Riverhurst and Central Butte	All traffic routed via the new link from Mawer to Eyebrow on the Outlook subdivision and was assumed to take the same route as does traffic originating at Eyebrow.
Dodsland	All traffic routed via Dodsland on the Kerrobert subdivision. All traffic was assumed to take the same routing as does traffic originating at Druid on the Kerrobert subdivision.
Subdivisions Transferred to Canadian National Lenore	All traffic routed over new construction between Wheatland and the CN Rivers subdivision. Eastbound and westbound traffic was assumed to take the same route from the connection as does traffic originating at Rivers on the Rivers subdivision.

Statement Showing Traffic Routes Used
to Develop Output Units for Subdivisions
Transferred Between CN and CP
(Continued)

Subdivision	Traffic Routes
Miniota	All traffic routed via Quadra on the Rivers subdivision. Eastbound and westbound traffic was assumed to take the same route as does traffic originating at Pope on the Rivers subdivision.
Russell	All traffic routed via the Rossburn subdivision. Eastbound and westbound traffic was assumed to take the same routes as does traffic originating at Russell on the Rossburn subdivision.
Matador	All traffic routed via Wartime on the Elrose subdivision. Eastbound and westbound traffic was assumed to take the same routes as does traffic originating at Wartime.
Subdivisions Transferred to Canadian National (Cont.) Colonsay	All traffic routed via Watrous on the Watrous subdivision. Eastbound and westbound traffic was assumed to take the same route as does traffic originating at Watrous.
Meadow Lake	All traffic routed via Tobey on the Big River subdivision. Eastbound and westbound traffic was assumed to take the same routes as does traffic originating at Debden on the Big River subdivision.

Changes in CP Rail's Year 1974 Output Units
Incurred in the Transportation of Direct Shipment
Statutory Grain Resulting from Rationalization

	Year 1974 Output Units		Increase/ Decrease*
	Actual	Rationalized	
Carloads			
Box	138,745	139,861	1,116
CP Hopper	5,350	5,350	0
Gov't Hopper	16,336	16,336	0
TOTAL	160,431	161,547	1,116
Car-Days			
Box	3,235,719	3,225,724	(9,995)
CP Hopper	100,353	99,093	(1,260)
Gov't Hopper	343,138	339,021	(4,117)
TOTAL	3,679,210	3,663,838	(15,372)
Loaded Car-Miles			
Box	118,714,983	119,855,663	1,140,680
CP Hopper	4,554,727	4,563,041	8,314
Gov't Hopper	14,109,696	14,128,358	18,662
TOTAL	137,379,406	138,547,062	1,167,656
Empty Car-Miles			
Box	96,445,142	97,369,836	924,694
CP Hopper	3,467,459	3,473,990	6,531
Gov't Hopper	13,713,923	13,732,290	18,367
TOTAL	113,626,524	114,576,116	949,592
Gross Ton-Miles (000)	14,746,743	14,865,915	119,172
Net Ton-Miles (000)	8,992,224	9,062,813	70,589
Yard Switching Minutes	5,228,619	5,295,142	66,523
Train Switching Minutes	624,037	627,250	3,213
Train-Miles	2,937,917	2,885,498	(52,419)
Train-Hours	133,896	120,236	(13,660)
Crew Wages ($)	6,172,139	6,047,789	(124,350)
Gallons of Fuel			
Prairie Region	14,512,340	14,549,787	37,447
Pacific Region	8,853,155	8,927,033	73,878
TOTAL	23,365,495	23,476,820	111,325
Diesel Unit			
600 - 1,500 HP	101,387	72,625	(28,762)
1,500 - 2,000 HP	3,700,657	3,627,652	(73,005)
2,000 - 3,000 HP	1,820,774	1,832,071	11,297
3,000 + Passenger	2,501,843	2,532,257	30,414
TOTAL	8,124,661	8,064,605	(60,056)
Carloads of Grain Req. Grain Doors	132,722	133,838	1,116

* ( ) denotes decrease.

Changes in Canadian National's Year 1974 Output Units Incurred in the Transportation of Direct Shipment Statutory Grain Resulting from Rationalization

	Year 1974 Output Units		Increase/ Decrease*
	Actual	Rationalized	
Car-Days			
Box Grain	1,494,285	1,478,379	(15,906)
Box 45-Ton Steel	1,368,137	1,307,751	(60,386)
Box 60-Ton Steel	509,235	503,807	(5,428)
Box Other	119,422	118,077	(1,345)
Wheat Board Hopper	241,198	239,253	(1,945)
Covered Hopper	43,254	42,915	(339)
TOTAL	3,775,531	3,690,182	(85,349)
Number of Units			
Carload Billing	326,009	321,823	(4,186)
Carloads in Box Cars	152,235	150,142	(2,093)
Carloads Total	166,104	164,011	(2,093)
Grain Doors Prairie	106,752	105,212	(1,540)
Grain Doors Mountain	45,483	44,930	(553)
Car-Miles			
Box Grain	106,892,913	107,210,583	317,670
Box 45-Ton Steel	97,440,531	94,359,615	(3,080,916)
Box 60-Ton Steel	35,748,449	35,851,332	102,883
Box Other	8,638,811	8,667,455	28,644
Wheat Board Hopper	21,687,919	21,748,308	60,389
Covered Hopper	3,159,529	3,166,193	6,664
TOTAL	273,568,152	271,003,486	(2,564,666)
Crew Wages ($)	7,897,190	7,686,976	(210,214)
Diesel Unit Miles			
800 - 1,399 HP	1,015,092	868,757	(146,335)
1,400 - 2,000 HP	1,582,015	1,602,947	20,932
Rated Over 2,000 HP	5,918,592	5,867,486	(51,106)
TOTAL	8,515,699	8,339,190	(176,509)
Gallons of Fuel	22,796,803	22,634,936	(161,867)
Gross Ton-Miles (000)	15,047,394	14,940,552	(106,842)
Net Ton-Miles (000)	8,794,106	8,763,344	(30,762)
Train-Miles Freight	3,956,276	3,880,497	(75,779)
Net Tons	9,603,906	9,530,680	(73,226)
Train Switching Minutes	810,654	797,085	(13,569)
Yard Switching Minutes	6,000,745	5,907,435	(93,310)

* ( ) denotes decrease.

Impact of Rationalization on CP Rail's 1974 Volume-Related Variable Costs of Transporting Direct Shipment Statutory Grain

Cost Element	Amount (Millions of Dollars)			Percentage Change
	1974 Actual	1974 Rationalized	Increase/ Decrease*	
OPERATING COSTS				
Running Track and Roadway Property				
Roadway Maintenance	$ 2.835	$ 2.861	$0.026	0.9
Property Taxes	0.567	0.572	0.005	0.9
Overhead	1.274	1.286	0.012	0.9
Sub-Total	4.676	4.719	0.043	0.9
Yard Track and Roadway Property				
Roadway Maintenance	$ 0.375	$ 0.380	$0.005	1.3
Property Taxes	0.077	0.078	0.001	1.3
Overhead	0.173	0.175	0.002	1.2
Sub-Total	0.625	0.633	0.008	1.3
Train Operations				
Locomotive Repair & Servicing	$ 4.449	$ 4.391	($0.058)	(1.3)
Locomotive Fuel	7.056	7.089	0.033	0.4
Crew Wages	6.172	6.048	(0.124)	(2.0)
Control, Dispatching & Communications	1.329	1.219	(0.110)	(8.3)
Caboose Repair & Servicing	0.122	0.120	(0.002)	(1.6)
Overhead	8.229	8.124	(0.105)	(1.3)
Sub-Total	27.357	26.991	(0.366)	(1.3)
Yard Operations				
Locomotive Repairs & Servicing	$ 0.464	$ 0.470	$0.006	1.3
Locomotive Fuel	0.227	0.229	0.002	0.9
Crew Wages	0.646	0.655	0.009	1.4
Control, Dispatching & Communications	0.318	0.322	0.004	1.3
Overhead	3.842	3.887	0.045	1.2
Sub-Total	5.497	5.563	0.066	1.2
Freight Car Operations				
Car Repair & Servicing	$10.723	$10.787	$0.064	0.6
Car Cleaning	0.500	0.504	0.004	0.8
Grain Doors	2.157	2.175	0.018	0.8
Communications	0.155	0.159	0.004	2.6
Overhead**	5.297	5.333	0.036	0.7
Sub-Total	18.832	18.958	0.126	0.7
Other Elements				
Carload Billing	$ 2.768	$ 2.787	$0.019	0.7
Loss and Damage	0.823	0.829	0.006	0.7
Communications	0.040	0.040	0.000	
Overhead	1.261	1.270	0.009	0.7
Sub-Total	4.892	4.926	0.034	0.7
TOTAL OPERATING COSTS	$61.879	$61.790	($0.089)	(0.1)

Impact of Rationalization on CP Rail's 1974 Volume-Related Variable Costs of Transporting Direct Shipment Statutory Grain

Cost Element	Amount (Millions of Dollars)			Percentage Change
	1974 Actual	1974 Rationalized	Increase/ Decrease*	
CAPITAL COSTS				
Depreciation				
Running Track and Roadway Property	$ 1.049	$ 1.058	$0.009	0.9
Yard Track and Roadway Property	0.231	0.234	0.003	1.3
Road Locomotives	1.238	1.225	(0.013)	(1.1)
Yard Locomotives	0.108	0.109	0.001	0.9
Cabooses	0.037	0.036	(0.001)	(2.7)
Freight Cars	1.715	1.713	(0.002)	(.1)
Signals and Communications	0.223	0.208	(0.015)	(6.7)
Other Property	0.358	0.360	0.002	0.6
Sub-Total	4.959	4.943	(0.016)	(0.3)
Capital Funds				
Running Track and Roadway Property	$ 6.996	$ 7.059	$0.063	0.9
Yard Track and Roadway Property	0.955	0.967	0.012	1.3
Road Locomotives	2.989	2.958	(0.031)	(1.0)
Yard Locomotives	0.108	0.110	0.002	1.9
Cabooses	0.125	0.123	(0.002)	(1.6)
Freight Cars	5.807	5.801	(0.006)	(0.1)
Signals and Communications	0.787	0.734	(0.053)	(6.7)
Other Property	1.768	1.774	0.006	0.3
Sub-Total	19.535	19.526	(0.009)	0
TOTAL CAPITAL COSTS	$24.494	$24.469	($0.025)	(0.1)
GRAND TOTAL EXCLUDING GRAIN DEPENDENT LINES	$86.373	$86.259	($0.114)	(0.1)

* ( ) denotes decrease.

** Includes payment to CNR of $0.276 million for switching at Thunder Bay and Vancouver.

Impact of Rationalization on Canadian National's 1974 Volume-Related Variable Costs of Transporting Direct Shipment Statutory Grain

Cost Element	Amount (Millions of Dollars)			Percentage Change
	1974 Actual	1974 Rationalized	Increase/ Decrease*	
OPERATING COSTS				
Running Track and Roadway Property				
Roadway Maintenance	$ 3.354	$ 3.348	($0.006)	(0.2)
Property Taxes	0.947	0.945	(0.002)	(0.2)
Overhead	1.708	1.704	(0.004)	(0.2)
Sub-Total	6.009	5.997	(0.012)	(0.2)
Yard Track and Roadway Property				
Roadway Maintenance	$ 0.733	$ 0.722	($0.011)	(1.5)
Property Taxes	0.150	0.148	(0.002)	(1.3)
Overhead	0.378	0.372	(0.006)	(1.6)
Sub-Total	1.261	1.242	(0.019)	(1.5)
Train Operations				
Locomotive Repair & Servicing	$ 3.379	$ 3.296	($0.083)	(2.5)
Locomotive Fuel	7.061	7.010	(0.051)	(0.7)
Crew Wages	7.897	7.687	(0.210)	(2.7)
Control, Dispatching & Communications	1.245	1.226	(0.019)	(1.5)
Caboose Repair & Servicing	0.208	0.204	(0.004)	(1.9)
Overhead	10.858	10.654	(0.204)	(1.9)
Sub-Total	30.648	30.077	(0.571)	(1.9)
Yard Operations				
Locomotive Repair & Servicing	$ 0.311	$ 0.306	($0.005)	(1.6)
Locomotive Fuel	0.249	0.245	(0.004)	(1.6)
Crew Wages	2.253	2.218	(0.035)	(1.6)
Control, Dispatching & Communications	0.189	0.187	(0.002)	(1.1)
Overhead	3.684	3.627	(0.057)	(1.5)
Sub-Total	6.686	6.583	(0.103)	(1.5)
Freight Car Operations				
Car Repair & Servicing	$ 7.296	$ 7.201	($0.095)	(1.3)
Car Cleaning	0.073	0.072	(0.001)	(1.4)
Grain Doors	1.844	1.819	(0.025)	(1.4)
Communications	0.134	0.136	0.002	1.5
Overhead	8.750	8.638	(0.112)	(1.3)
Sub-Total	18.097	17.866	(0.231)	(1.3)
Other Elements				
Carload Billing	$ 1.299	$ 1.282	($0.017)	(1.3)
Loss and Damage	0.484	0.480	(0.004)	(0.8)
Communication	0.020	0.020	0.000	0
Overhead	0.626	0.619	(0.007)	(1.1)
Sub-Total	2.429	2.401	(0.028)	(1.2)
TOTAL OPERATING COSTS	$65.130	$64.166	($0.964)	(1.5)

Impact of Rationalization on Canadian National's 1974 Volume-Related Variable Costs of Transporting Direct Shipment Statutory Grain

Cost Element	Amount (Millions of Dollars)			Percentage Change
	1974 Actual	1974 Rationalized	Increase/ Decrease*	
CAPITAL COSTS				
Depreciation				
Running Track and Roadway Property	$ 0.990	$ 0.988	($0.002)	(0.2)
Yard Track and Roadway Property	0.147	0.145	(0.002)	(1.4)
Road Locomotives	1.470	1.430	(0.040)	(2.7)
Yard Locomotives	0.153	0.151	(0.002)	(1.3)
Cabooses	0.071	0.070	(0.001)	(1.4)
Freight Cars	1.352	1.327	(0.025)	(1.8)
Signals and Communications	0.328	0.322	(0.006)	(1.8)
Other Property	0.216	0.214	(0.002)	(0.9)
Sub-Total	4.727	4.647	(0.080)	(1.7)
Capital Funds				
Running Track and Roadway Property	$ 4.009	$ 4.000	($0.009)	(0.2)
Yard Track and Roadway Property	0.596	0.587	(0.009)	(1.5)
Road Locomotives	1.941	1.888	(0.053)	(2.7)
Yard Locomotives	0.157	0.155	(0.002)	(1.3)
Cabooses	0.158	0.156	(0.002)	(1.3)
Freight Cars	3.019	2.962	(0.057)	(1.9)
Signals and Communications	0.441	0.433	(0.008)	(1.8)
Other Property	0.746	0.736	(0.010)	(1.3)
Sub-Total	11.067	10.917	(0.150)	(1.4)
TOTAL CAPITAL COSTS	$15.794	$15.564	($0.230)	(1.5)
GRAND TOTAL EXCLUDING GRAIN DEPENDENT LINES	$80.924	$79.730	($1.194)	(1.5)

* ( ) denotes decrease.

Canadian National Carloads Originated on Grain Dependent Lines 1974 Actual vs. 1974 Rationalized			
Subdivision	1974 Actual	Rationalized	Difference
I. Subdivisions With No Change In Traffic			
Acadia Valley	560	560	0
Athabasca	1,078	1,078	0
Bengough	1,620	1,620	0
Bodo	1,380	1,380	0
Chelan	804	804	0
Conquest	2,357	2,357	0
Corning	485	485	0
Cromer	1,539	1,539	0
Endiang	524	524	0
Glenavon	2,329	2,329	0
Lewvan	4,231	4,231	0
Mantario	1,828	1,828	0
Oakland	571	571	0
Paddockwood	571	571	0
Porter	433	433	0
Preeceville	3,784	3,784	0
Rhein	758	758	0
Ridgeville	201	201	0
Ste. Rose	280	280	0
Winnipegosis	273	273	0
Total Group I	25,606	25,606	0
II. Subdivisions With Traffic Increases			
CN Subdivision			
Avonlea	1,967	2,108	141
Battleford	435	460	25
Blaine Lake	3,603	3,727	124
Bolney	393	430	37
Brooksby	1,166	1,263	97
Cudworth	1,882	1,991	109
Demay	196	216	20
Elrose	4,759	5,084	325
Hartney	1,603	1,730	127
Miami	1,485	1,644	159
Robinhood	1,268	1,344	76
Rossburn	1,725	1,796	71
St. Brieux	1,263	1,286	23
Turtleford	2,489	2,668	179
Weyburn	1,226	1,243	17
Sub-total	25,460	26,990	1,530
Subdivisions Transferred from CP Rail to Canadian National			
Colonsay	0	1,932	1,932
Lenore	0	520	520
Matador	0	971*	971
Miniota	0	751**	751
Russell	0	456	456
Sub-total	0	4,630	4,630
Total Group II	25,460	31,620	6,160

Canadian National Carloads
Originated on Grain Dependent Lines
1974 Actual vs. 1974 Rationalized

Subdivision	1974 Actual	Rationalized	Difference
III. Subdivisions With Traffic Decreases			
Amiens	695	588	(107)
Carman	2,934	2,898	(36)
Stettler	1,883	1,630	(253)
Tonkin	1,353	745	(608)
White Bear	1,238	1,064	(174)
Total Group III	8,103	6,925	(1,178)
IV. Subdivisions Abandoned or Transferred			
Subdivisions Abandoned			
Carberry	76	0	(76)
Carlton	610	0	(610)
Central Butte	395	0	(395)
Cutknife	35	0	(35)
Dodsland	1,189	0	(1,189)
Goodwater	329	0	(329)
Gravelbourg	411	0	(411)
Haight	70	0	(70)
Hatherleigh	148	0	(148)
Kingman	29	0	(29)
Main Centre	472	0	(472)
Meskanaw	657	0	(657)
Neepawa	97	0	(97)
Notre Dame	114	0	(114)
Pleasant Point	140	0	(140)
Rapid City	1,102	0	(1,102)
Wakopa	298	0	(298)
Wawanesa	437	0	(437)
Sub-total	6,609	0	(6,609)
Subdivisions Transferred to CP Rail			
Central Butte	647	0	(647)
Dodsland	1,686	0	(1,686)
Gravelbourg	3,003	0	(3,003)
Riverhurst	466	0	(466)
Sub-total	5,802	0	(5,802)
Total Group IV	12,411	0	(12,411)
GRAND TOTAL ALL GROUPS	71,580	64,151	(7,429)

*Includes 174 cars transferred from the CN White Bear subdivision.

**Includes 187 cars transferred from the CN Rapid City subdivision.

CP Rail Carloads
Originated on Grain Dependent Lines
1974 Actual vs. 1974 Rationalized

Subdivision	1974 Actual	Rationalized	Difference
I. Subdivisions With No Change In Traffic			
Altawan	1,298	1,298	0
Assiniboia	1,530	1,530	0
Bulyea	3,705	3,705	0
Burstall	59	59	0
Dunelm	467	467	0
Furness	605	605	0
Gretna	901	901	0
Hatton	241	241	0
Kisbey	1,124	1,124	0
Lac Du Bonnet	303	303	0
Lacombe	882	882	0
Lomond	946	946	0
Macklin	2,617	2,617	0
Neudorf	1,980	1,980	0
Notukeu	2,094	2,094	0
Pennant	572	572	0
Reford	828	828	0
Shaunavon	4,577	4,577	0
Stirling	1,276	1,276	0
Tyvan	2,780	2,780	0
Vanguard	1,782	1,782	0
Winnipeg Beach	80	80	0
Wishart	772	772	0
Total Group I	31,419	31,419	0
II. Subdivisions With Traffic Increases			
CP Rail Subdivisions			
Amulet	320	406	86
Arborg	876	1,072	196
Arcola	2,236	2,750	514
Bromhead	528	722	194
Cardston	568	626	58
Coronation	1,817	2,068	251
Fife Lake	1,811	1,949	138
Glenboro	2,943	3,464	521
Irricana	1,082	1,096	14
Kelfield	679	722	43
Kerrobert	3,369	3,773	404
Napinka	3,868	4,195	327
Outlook	2,870	3,180	310
Shamrock	1,486	1,502	16
Suffield	1,032	1,052	20
Tisdale	2,506	2,530	24
White Fox	780	782	2
Willingdon	2,084	2,125	41
Wood Mountain	2,398	2,454	56
Sub-total	33,253	36,468	3,215

CP Rail Carloads
Originated on Grain Dependent Lines
1974 Actual vs. 1974 Rationalized

Subdivision	1974 Actual	Rationalized	Difference
II. Subdivisions With Traffic Increases (Continued)			
Subdivisions Transferred from Canadian National to CP Rail			
Gravelbourg	0	2,740	2,740
Dodsland	0	1,547	1,547
Riverhurst & Central Butte	0	1,008	1,008
Sub-total	0	5,295	5,295
Total Group II	33,253	41,763	8,510
III. Subdivisions With Traffic Decreases			
Carman	121	0	(121)
Strathmore	461	305	(156)
Lyleton	965	767	(198)
Total Group III	1,547	1,072	(475)
IV. Subdivisions Abandoned or Transferred			
Subdivisions Abandoned			
Alberta Central	168	0	(168)
Alida	883	0	(883)
Asquith	481	0	(481)
Big Gully	319	0	(319)
Cassils	25	0	(25)
Colony	194	0	(194)
Colonsay	16	0	(16)
Crossfield	178	0	(178)
McMorran	546	0	(546)
Medstead	78	0	(78)
Miniota	583	0	(583)
Rosemary	122	0	(122)
Rosetown	348	0	(348)
Snowflake	272	0	(272)
Stewart Valley	332	0	(332)
Varcoe	470	0	(470)
Vegreville	187	0	(187)
Woolford	58	0	(58)
Sub-total	5,260	0	(5,260)
Subdivisions Transferred from CP Rail to Canadian National			
Colonsay	1,932	0	(1,932)
Lenore	520	0	(520)
Matador	797	0	(797)
Miniota	564	0	(564)
Russell	456	0	(456)
Sub-total	4,269	0	(4,269)
Total Group IV	9,529	0	(9,529)
GRAND TOTAL ALL GROUPS	75,748	74,254	(1,494)

Grain Dependent Lines Distribution of 1974 Line-Related Costs by Disposition of the Lines				
Item	Line Disposition			Total
	Retained in System	Abandoned	Transferred	
CP Rail				
Costs ($000)				
Roadway Maintenance	$ 2,918	$ 450	$ 116	$ 3,484
Stations	0	0	0	0
Property Taxes	332	94	18	444
Overhead	1,442	222	57	1,721
Depreciation	1,904	544	77	2,525
Capital Funds	10,870	3,288	477	14,635
Sub-Total	$17,466	$4,598	$ 745	$22,809
Roadway Maintenance Shortfall	$ 5,579	$2,344	$ 264	$ 8,187
Depreciation Shortfall	43	14	2	59
Capital Funds Shortfall	445	144	22	611
Sub-Total	$ 6,067	$2,502	$ 288	$ 8,857
TOTAL	$23,533	$7,100	$1,033	$31,666
Canadian National				
Costs ($000)				
Roadway Maintenance	$ 2,852	$1,273	$ 65	$ 4,190
Stations	249	0	0	249
Property Taxes	298	144	6	448
Overhead	1,961	796	44	2,801
Depreciation	1,195	602	42	1,839
Capital Funds	4,480	2,465	170	7,115
Sub-Total	$11,035	$5,280	$ 327	$16,642
Roadway Maintenance Shortfall	$ 2,050	$1,416	$ 182	$ 3,648
Depreciation Shortfall	53	28	2	83
Capital Funds Shortfall	321	172	15	508
Sub-Total	$ 2,424	$1,616	$ 199	$ 4,239
TOTAL	$13,459	$6,896	$ 526	$20,881

Grain Dependent Lines
Reduction in Line-Related Costs Resulting From Rationalization

Item	Amount ($000,000) Rationalized System			Total 1974 Actual	Reduction
	CP Rail	Canadian National	Total		
Roadway Maintenance	$ 3.029	$ 3.016	$ 6.045	$ 7.674	$ 1.629
Stations	0.0	0.249	0.249	0.249	—
Property Taxes	0.345	0.316	0.661	0.892	0.231
Overhead	1.496	2.075	3.571	4.522	0.951
Book Depreciation	1.976	1.262	3.238	4.364	1.126
Book Capital Funds	11.282	4.750	16.032	21.750	5.718
Sub-Total	$18.128	$11.668	$29.796	$39.451	$ 9.655
Roadway Maintenance Shortfall	$ 5.790	$ 2.183	$ 7.973	$11.835	$ 3.862
Depreciation Shortfall	0.045	0.056	0.101	0.142	0.041
Capital Funds Shortfall	0.461	0.341	0.802	1.119	0.317
Sub-Total	$ 6.296	$ 2.580	$ 8.876	$13.096	$ 4.220
Total	$24.424	$ 14.248	$38.672	$52.547	$13.875

Grain Dependent Lines
Reduction in Volume-Related Costs Resulting From Rationalization

Item	Amount ($000,000) Rationalized System			Total 1974 Actual	Reduction
	CP Rail	Canadian National	Total		
Roadway Maintenance	$0.220	$0.310	$0.530	$0.572	$0.042
Property Taxes	0.045	0.050	0.095	0.102	0.007
Overhead	0.105	0.162	0.267	0.288	0.021
Depreciation	0.099	0.073	0.172	0.181	0.009
Capital Funds	0.570	0.276	0.846	0.889	0.043
Sub-Total	$1.039	0.871	$1.910	$2.032	$0.122
Roadway Maintenance Shortfall	$0.491	$0.287	$0.778	$0.822	$0.044
Depreciation Shortfall	0.002	0.004	0.006	0.006	--
Capital Funds Shortfall	0.026	0.029	0.055	0.058	0.003
Sub-Total	0.519	$0.320	$0.839	0.886	0.047
Total	$1.558	$1.191	$2.749	$2.918	$0.169

Prairie Rail Authority Lines

Subdivision	GHTC Region	Miles of Line	1974 Carloads Originated *	Junction Point With Basic Network
CP Rail				
Amulet	6	6.3	310	Ormiston
Arborg	3	74.3	1,072	Rugby
Bromhead	6	13.4	722	Southall-Gladmar
Burstall (Schuler Spur)	13	6.8	59	Pivot
Cardston	13	39.0	626	Raymond
Dodsland**	11	32.6	1,547	Dodsland
Dunelm	9	25.2	467	Player
Fife Lake	6	19.8	350	Coronach
Furness	11	19.5	605	Epping
Gravelbourg**	9	34.7	2,740	Mossbank-Tyson
Hatton	13	17.1	241	Hatton
Kelfield	11	27.9	722	Brass
Langdon	14	45.7	658	Cosway
Lomond	13	63.2	946	Eltham
Lyleton	2	22.2	767	Deloraine
Melfort	8	55.2	1,280	Lanigan
Pennant	13	15.3	572	Grant Spur
Riverhurst-Central Butte**	10	36.4	1,008	Eyebrow
Shamrock	9	70.0	1,502	Hak
Strathmore	13	14.1	305	Langdon
Suffield	13	48.6	1,052	Eltham
Tyvan	6	87.2	2,780	Stoughton-Regina
Wishart	8	26.9	772	Foam Lake
Wood Mountain	9	64.9	2,454	Maxstone
Total CP Rail		866.3	23,557	
Canadian National				
Acadia Valley	11	24.3	560	Eyre Jct.
Alliance	14	14.3	863	Forestburg
Amiens	12	25.6	588	Speers Jct.
Arborfield	5	19.4	428	Crane
Avonlea	6	59.5	2,108	Moose Jaw
Battleford	11	7.8	460	Battleford Jct.
Bengough	6	71.5	1,620	Talmage
Bodo	11	51.5	1,380	Unity
Bolney	12	15.4	430	Spruce Lake Jct.
Carman (Belmont-Somerset)	2	39.9	1,571	Morris
Carman (Carman-Carman Jct)	2	43.6	1,327	Carman Jct.
Chelan	5	60.1	804	Reserve
Colonsay***	10	59.4	1,932	Watrous
Corning	6	14.4	485	Peebles
Coronado	14	51.9	596	Abilene Jct.
Cudworth	8	62.3	1,991	Totzke
Endiang	14	34.3	524	Hanna
Erwood	5	50.5	1,323	Thunderhill Jct.
Gravelbourg	9	7.3	0	Avonlea
Hartney	2	42.0	1,730	Morris
Lenore***	4	15.4	520	Rivers
Matador***	11	30.4	971	Wartime
Miami	2	62.1	1,644	Morris
Miniota***	4	11.4	751	Quaxdra
Oakland	4	53.3	571	Portage La Prairie
Porter	12	18.0	433	Oban Jct.
Preeceville	5	48.5	1,324	Sturgis
Rhein	7	37.8	758	Ross Jct.
Ridgeville	1	6.9	201	Emerson
Robinhood	12	69.6	1,344	Speers Jct.
Rossburn-Neepawa	4	109.0	1,796	Neepawa
Russell***	4	12.9	456	Neepawa
Sheerness	14	34.8	48	Sheerness
Ste. Rose	5	37.1	280	Ochre River
Stettler	14	77.1	1,630	Dinosaur
Tonkin	7	15.7	745	Ross Jct.
Weyburn	6	38.0	1,243	Talmage
White Bear	11	24.2	1,064	Eston Jct.
Winnipegosis	5	20.1	273	Sifton Jct.
Total Canadian National		1,477.3	36,772	

*Number of carloads originated are for year 1974 rationalized system and include only direct shipment statutory grain.

**Denotes lines transferred from Canadian National to CP Rail.

***Denotes lines transferred from CP Rail to Canadian National.

PRA Grain Dependent Lines
1974 Line-Related Roadway Maintenance Costs
Rationalized System

Item	Amount (000,000)			Percentage Distribution
	CP Rail	Canadian National	Total	
Roadway Maintenance	$0.537	$1.636	$ 2.173	14.9
Stations	0.000	0.249	0.249	1.7
Property Taxes	0.080	0.180	0.260	1.8
Overhead	0.264	1.135	1.399	9.6
Sub-total	$0.881	$3.200	$ 4.081	28.0
Book Depreciation	0.508	0.668	1.176	8.0
Book Capital Funds	2.978	2.694	5.672	38.9
Sub-total	$3.486	$3.362	$ 6.848	46.9
Total Expenditures	$4.367	$6.562	$10.929	74.9
Roadway Maintenance Shortfall	1.925	1.366	3.291	22.6
Depreciation Shortfall	0.012	0.033	0.045	0.3
Capital Funds Shortfall	0.126	0.200	0.326	2.2
Sub-Total	$2.063	$1.599	$ 3.662	25.1
Total Costs	$6.430	$8.161	$14.591	100.0

Prairie Rail Authority Network
1974 Output Units Incurred in
The Transportation of Direct Shipment Statutory Grain

Item	CP Rail	Canadian National	Total
Number of Carloads	23,557	36,772	60,329
Car-Miles	1,509,907	2,985,934	4,495,841
Car-Days	114,667	130,169	244,836
Gross Ton Miles (000)	80,460	145,321	225,781
Revenue Ton Miles (000)	48,748	83,942	132,690
Train Switching Minutes	98,464	159,921	258,385
Train Miles	64,979	120,832	185,811
Train Hours	3,757	*	*
Diesel Unit Miles	96,645	238,082	334,727
Fuel Gallons	127,046	220,181	347,227
Crew Wages	$123,276	$251,418	$374,694
Per Car Averages			
Tons	64.6	56.2	59.0
Loaded Car-miles	32.0	40.6	37.3
Car-Days	4.9	3.5	4.1
Train Averages			
Diesel Units	1.5	2.0	1.8
Crew Wages per Train Mile	$1.90	$2.08	$2.02
Train Speed	17.3	*	*

*Train hours are not available for Canadian National.

Prairie Rail Authority Lines
1974 Volume-Related Costs Incurred by the Railway

Item	Amount ($000,000)		
	CP Rail	Canadian National	Total
Operating Costs			
Running Track and Roadway Property			
Roadway Maintenance	$0.022	$0.094	$0.116
Property Taxes	0.005	0.013	0.018
Overhead	0.011	0.048	0.059
Sub-total	0.038	0.155	0.193
Maintenance Shortfall	0.142	0.150	0.292
Total	0.180	0.305	0.485
Train Operations			
Locomotive Repairs & Servicing	$0.069	$0.122	$0.191
Locomotive Fuel	0.039	0.068	0.107
Crew Wages	0.123	0.251	0.374
Control, Dispatching & Communications	0.038	0.030	0.068
Caboose Repair & Servicing	0.003	0.006	0.009
Overhead	0.126	0.329	0.455
Total	0.398	0.806	1.204
Freight Car Operations			
Car Repair & Servicing	$0.120	$0.120	$0.240
Communications	0.001	0.002	0.003
Overhead	0.048	0.124	0.172
Total	0.169	0.246	0.415
Total Operating Costs	$0.747	$1.357	$2.104
Depreciation Costs			
Running Track and Roadway Property			
Book Depreciation	$0.011	$0.020	$0.031
Depreciation Shortfall	0.001	0.001	0.002
Sub-total	0.012	0.021	0.033
Road Locomotives	0.017	0.059	0.076
Cabooses	0.001	0.002	0.003
Freight Cars	0.046	0.036	0.082
Signals and Communications	0.005	0.006	0.011
Other Property	0.003	0.004	0.007
Total Depreciation Costs	0.084	0.128	0.212
Capital Funds Costs			
Running Track and Roadway Property			
Net Investment Basis	$0.059	$0.075	$0.134
Capital Funds Shortfall	0.008	0.008	0.016
Sub-total	0.067	0.083	0.150
Road Locomotives	0.041	0.078	0.119
Cabooses	0.003	0.005	0.008
Freight Cars	0.157	0.079	0.236
Signals and Communications	0.019	0.009	0.028
Other Property	0.013	0.015	0.028
Total Capital Funds Costs	$0.300	$0.269	$0.569
Total Volume-Related Costs	$1.131	$1.754	$2.885

CN Rationalized Statutory Grain Carloads to Churchill
by Subdivision in Ascending Average Haul Order

Subdivision	Average Haul Loaded (Miles)	Carloads to Churchill			Total Carloads		
		Amount	Percent of Total		Amount	% of Churchill Total	
			Subdivision	Cumulative		Subdivision	Cumulative
Wekusko	478.02	4	-	-	128	1.2	1.2
Chelan	697.10	89	0.8	0.8	804	7.7	8.9
Assiniboine	701.57	117	1.1	1.9	895	8.5	17.4
Rivers	702.32	84	0.8	2.7	4,748	45.2	62.6
Arborfield	716.17	61	0.6	3.3	428	4.1	66.7
Tonkin	739.80	60	0.6	3.9	745	7.1	73.8
Preeceville	745.25	153	1.5	5.4	3,784	36.0	109.8
Tisdale	748.96	301	2.9	8.3	4,287	40.8	150.6
Togo	750.51	98	0.9	9.2	3,279	31.2	181.8
Glenavon	759.72	1	-	-	2,329	22.2	204.0
Rhein	761.66	59	0.6	9.8	758	7.2	211.2
Yorkton	764.02	58	0.6	10.4	734	7.0	218.2
Avonlea	768.01	764	7.3	17.7	2,527	24.1	242.3
Lewvan	781.57	1	-	-	4,231	40.3	282.6
Brooksby	783.37	121	1.2	18.9	1,263	12.0	294.6
Margo	796.60	608	5.8	24.7	5,434	51.8	346.4
Paddockwood	815.75	51	0.5	25.2	571	5.4	351.8
Big River	857.86	103	1.0	26.2	660	6.3	358.1
Regina	861.48	1	-	-	153	1.5	359.6
Watrous	863.73	1,219	11.6	37.8	10,085	96.1	455.7
Blaine Lake	867.37	459	4.3	42.1	3,727	35.5	491.2
St. Brieux	891.36	151	1.4	43.5	1,286	12.2	503.4
Amiens	892.35	118	1.1	44.6	588	5.6	509.0
Aberdeen	897.61	155	1.5	46.1	1,827	17.4	526.4
Letellier	898.24	3	-	-	1,651	15.7	542.1
Robinhood	901.89	254	2.4	48.5	1,344	12.8	554.9
Carlton	905.54	0	-	-	0	-	-
Meskanaw	912.51	0	-	-	0	-	-
Central Butte	923.32	32	0.3	48.8	465	4.4	559.3
Cudworth	929.59	248	2.4	51.2	1,991	19.0	578.3
Demay	934.72	24	0.2	51.4	216	2.1	580.4
Kingman	939.00	0	-	-	0	-	-
Riverhurst	940.63	10	0.1	51.5	0	-	-
Duck Lake	955.24	228	2.2	53.7	1,659	15.8	596.2
Gravelbourg	962.66	0	-	-	0	-	-
Langham	964.54	351	3.3	57.0	2,614	24.9	621.1
Rosetown	983.96	462	4.4	61.4	4,493	42.8	663.9
Blackfoot	984.16	792	7.5	68.9	4,836	46.1	710.0
Edmonton	986.85	231	2.2	71.1	8,005	76.2	786.2
Porter	988.68	82	0.8	71.9	433	4.1	790.3
Hatherleigh	991.16	0	-	-	0	-	-
Craik	999.64	386	3.7	75.6	3,646	34.7	825.0
Dodsland	1,003.00	0	-	-	0	-	-
Turtleford	1,011.99	553	5.3	80.9	2,668	25.4	850.4
Wainwright	1,012.84	748	7.1	88.0	6,333	60.3	910.7
Bodo	1,016.53	166	1.6	89.6	1,380	13.1	923.8
Conquest	1,017.26	206	2.0	91.6	2,357	22.4	946.2
Cutknife	1,028.30	0	-	-	0	-	-
Battleford	1,029.72	73	0.7	92.3	460	4.4	950.6
Main Centre	1,033.39	0	-	-	0	-	-
Vegreville	1,049.04	134	1.3	93.6	2,856	27.2	977.8
Bolney	1,049.98	62	0.6	94.2	430	4.1	981.9
Elrose	1,050.48	361	3.4	97.6	5,084	48.4	1,030.3
White Bear	1,097.23	21	0.2	97.8	1,064	10.1	1,040.4
Coronado	1,119.28	110	1.0	98.8	1,637	15.6	1,056.0
Alliance	1,137.73	50	0.5	99.3	1,914	18.2	1,074.2
Camrose	1,138.97	46	0.4	99.7	1,213	11.6	1,085.8
Bonnyville	1,240.56	30	0.3	100.0	516	4.9	1,090.7
TOTAL		10,499			114,536		

Actual 1974 Revenue Shortfall Incurred By CP Rail and Canadian National			
Item	Amount ($000,000)		
	CP Rail	Canadian National	Total
Revenues			
Freight Rates	$ 46.051	$ 41.997	$ 88.048
Miscellaneous	0.156	0.223	0.379
Sub-Total	$ 46.207	$ 42.220	$ 88.427
Subsidy	23.085	28.473	51.558
Total	$ 69.292	$ 70.693	$139.985
Variable Costs			
Grain Dependent Lines	$ 33.257	$ 22.208	$ 55.465
Other Lines and Above Rail Operations	86.373	80.924	167.297
Transit Traffic	2.903	1.850	4.753
Total	$122.533	$104.982	$227.515
Revenue Shortfall			
Gross (Before Subsidy)	$ 76.326	$ 62.762	$139.088
Net (After Subsidy)	$ 53.241	$ 34.289	$ 87.530
Ratio Variable Costs to Revenues			
Excluding Subsidy	2.65	2.49	2.57
Including Subsidy	1.77	1.49	1.63

Source: CCTGR Report Volume I, Appendices F, K, M, and O.

Prairie Rail Line Profiles Line Categories			
Category/Railway/Subdivision	Miles	Total Carloads	Carloads Per Mile
Category I - Less Than 5.0 Carloads Per Mile of Line			
CP Rail			
1. Alberta Central	58.0	168	2.9
2. Cassils	13.4	25	1.9
3. Medstead	36.0	78	2.2
4. Rosemary	40.5	122	3.0
5. Winnipeg Beach	24.6	80	3.3
6. Woolford	21.0	58	2.8
Sub-Total	193.5	531	2.7
Canadian National			
7. Cutknife	26.84	35	1.3
8. Hatherleigh	31.56	148	4.7
9. Kingman	13.00	29	2.2
10. Pleasant Point	41.00	140	3.4
Sub-Total	112.40	352	3.1
Total 10 Subdivisions	305.90	883	2.9
Category II - 5.0 to 9.9 Carloads Per Mile of Line			
CP Rail			
1. Burstall (Schuler Spur)	6.8	59	8.7
2. Cardston	66.4	568	8.6
3. Colony	25.0	194	7.8
4. Crossfield	28.0	178	6.4
5. Lac Du Bonnet	37.6	303	8.1
6. McMorran	61.6	546	8.9
7. Vegreville	24.6	187	7.6
Sub-Total	250.0	2,035	8.1
Canadian National			
8. Amiens	74.98	695	9.3
9. Carberry	10.02	76	7.6
10. Demay	24.92	196	7.9
11. Endiang	62.18	524	8.4
12. Haight	8.75	70	8.0
13. Main Centre	48.64	472	9.7
14. Meskanaw	89.45	657	7.3
15. Neepawa	11.25	97	8.6
16. Ste. Rose	37.12	280	7.5
Sub-Total	367.31	3,067	8.4
Total 16 Subdivisions	617.31	5,102	8.3

Prairie Rail Line Profiles Line Categories			
Category/Railway/Subdivision	Miles	Total Carloads	Carloads Per Mile
Category III - 10.0 - 14.9 Carloads Per Mile of Line			
CP Rail			
1. Altawan	121.1	1,298	10.7
2. Arborg	69.7	876	12.6
3. Asquith	43.9	481	11.0
4. Big Gully	24.6	319	13.0
5. Hatton	17.8	241	13.5
6. Lacombe	84.4	882	10.5
7. Lenore	41.3	520	12.6
8. Rosetown	30.7	348	11.3
9. Strathmore	33.6	461	13.7
10. Suffield	83.9	1,032	12.3
11. White Fox	73.4	780	10.6
12. Willingdon	155.3	2,084	13.4
Sub-Total	779.7	9,322	12.0
Canadian National			
13. Athabasca	72.90	1,078	14.8
14. Bolney	28.21	393	13.9
15. Chelan	60.07	804	13.4
16. Goodwater	26.84	329	12.3
17. Oakland	53.38	571	10.7
18. Rapid City	74.40	1,102	14.8
19. Robinhood	101.51	1,268	12.5
20. Tonkin	112.06	1,353	12.1
21. Winnipegosis	20.79	273	13.0
Sub-Total	550.16	7,171	13.0
Total 21 Subdivisions	1,329.86	16,493	12.4
Category IV - 15.0 to 19.9 Carloads Per Mile of Line			
CP Rail			
1. Alida	54.5	883	16.2
2. Carman	7.6	121	15.9
3. Colonsay	108.5	1,948	18.0
4. Coronation	116.5	1,817	15.6
5. Dunelm	25.2	467	18.5
6. Kisbey	61.7	1,124	18.2
7. Lomond	63.2	946	15.0
8. Matador	43.1	797	18.5
9. Miniota	75.3	1,147	15.2
10. Reford	42.8	828	19.4
11. Russell	23.9	456	19.1
12. Shamrock	81.8	1,486	18.2
13. Snowflake	16.6	272	16.4
14. Stewart Valley	20.4	332	16.3
15. Stirling	84.0	1,276	15.2
16. Tisdale	131.7	2,506	19.0
17. Varcoe	29.8	470	15.8
Sub-Total	986.6	16,876	17.1

Prairie Rail Line Profiles Line Categories			
Category/Railway/Subdivision	Miles	Total Carloads	Carloads Per Mile
Category IV - 15.0 to 19.9 Carloads Per Mile of Line (Continued)			
Canadian National			
18. Carlton	35.93	610	17.0
19. Central Butte	53.32	1,042	19.5
20. Dodsland	154.11	2,875	18.7
21. Hartney	82.86	1,603	19.4
22. Rossburn	104.27	1,725	16.5
23. Stettler	108.02	1,883	17.4
24. Wakopa	17.83	298	16.7
25. Wawanesa	22.84	437	19.1
Sub-Total	579.18	10,473	18.1
Total 25 Subdivisions	1,565.78	27,349	17.5
Category V - 20.0 to 24.9 Carloads Per Mile of Line			
CP Rail			
1. Amulet	14.9	320	21.5
2. Arcola	96.7	2,236	23.1
3. Assiniboia	63.7	1,530	24.0
4. Fife Lake	79.6	1,811	22.8
5. Glenboro	139.0	2,943	21.2
6. Kelfield	28.5	679	23.8
7. Notukeu	96.9	2,094	21.6
8. Outlook	117.9	2,870	24.3
9. Pennant	25.1	572	22.8
10. Vanguard	74.3	1,782	24.0
Sub-Total	736.6	16,837	22.9
Canadian National			
11. Arcadia Valley	24.31	560	23.0
12. Avonlea	83.77	1,967	23.5
13. Bengough	71.45	1,620	22.7
14. Brooksby	51.07	1,166	22.8
15. Corning	22.29	485	21.8
16. Cudworth	90.56	1,882	20.8
17. Miami	62.08	1,485	23.9
18. Porter	18.00	433	24.1
19. Rhein	37.83	758	20.0
20. Ridgeville	9.13	201	22.0
21. St. Brieux	52.20	1,263	24.2
Sub-Total	522.69	11,820	22.6
Total 21 Subdivisions	1,259.29	28,657	22.8

Prairie Rail Line Profiles
Line Categories

Category/Railway/Subdivision	Miles	Total Carloads	Carloads Per Mile
Category VI - 25.0 to 29.9 Carloads Per Mile of Line			
CP Rail			
1. Irricana	36.9	1,082	29.3
2. Lyleton	37.5	965	25.7
3. Neudorf	73.0	1,980	27.1
4. Wishart	26.9	772	28.7
Sub-Total	174.3	4,799	27.5
Canadian National			
5. Bodo	51.50	1,380	26.8
6. Carman	109.26	2,934	26.9
7. Conquest	94.33	2,357	25.0
8. Cromer	52.79	1,539	29.2
9. Glenavon	91.84	2,329	25.4
10. Gravelbourg	118.92	3,414	28.7
11. Paddockwood	20.25	571	28.2
12. Riverhurst	18.02	466	25.9
Sub-Total	556.91	14,990	26.9
Total 12 Subdivisions	731.21	19,789	27.1
Category VII - 30.0 to 39.9 Carloads Per Mile of Line			
CP Rail			
1. Furness	19.5	605	31.0
2. Kerrobert	102.5	3,369	32.9
3. Tyvan	87.3	2,780	31.8
4. Napinka	106.8	3,868	36.2
5. Shaunavon	118.2	4,577	38.7
6. Wood Mountain	64.9	2,398	37.0
Sub-Total	499.2	17,597	35.3
Canadian National			
7. Blaine Lake	116.51	3,603	30.9
8. Preeceville	111.56	3,784	33.9
9. Turtleford	76.95	2,489	32.4
10. Weyburn	38.24	1,226	32.1
11. Elrose	120.65	4,759	39.4
12. Lewvan	114.20	4,231	37.1
13. White Bear	34.30	1,238	36.1
Sub-Total	612.41	21,330	34.8
Total 13 Subdivisions	1,111.61	38,927	35.0
Category VIII - 40.0 and Over Carloads Per Mile of Line			
CP Rail			
1. Bromhead	12.9	528	40.9
2. Bulyea	85.8	3,705	43.2
3. Gretna	6.8	901	132.5
4. Macklin	46.4	2,617	56.4
Sub-Total	151.9	7,751	51.0
Canadian National			
5. Mantario	43.79	1,828	41.7
6. Notre Dame	2.55	114	44.7
7. Battleford	7.74	435	56.2
Sub-Total	54.08	2,377	44.0
Total 7 Subdivisions	205.98	10,128	49.2

PRAIRIE RAIL LINE PROFILES
1974 LINE-RELATED COSTS PER MILE

Line Category	Amount								
	I	II	III	IV	V	VI	VII	VIII	Average All Categories
Canadian National									
Roadway Maintenance Expenditures	$ 523	$1,268	$1,131	$1,475	$1,238	$1,223	$1,269	$1,556	$1,249
Stations	0	0	65	31	68	128	145	0	74
Property Taxes	115	106	144	149	120	96	175	125	133
Overhead	339	775	754	956	815	858	902	988	835
Subtotal	$ 977	$2,149	$2,094	$2,611	$2,241	$2,305	$2,491	$2,669	$2,291
Depreciation	575	537	644	481	541	538	551	451	548
Capital Funds	2,258	2,133	2,188	1,885	2,239	2,119	2,195	1,162	2,120
Subtotal	$2,833	$2,670	$2,832	$2,366	$2,780	$2,657	$2,746	$2,063	$2,668
TOTAL	$3,810	$4,819	$4,926	$4,977	$5,021	$4,962	$5,237	$4,732	$4,959
CP Rail									
Roadway Maintenance Expenditures	$ 234	$ 918	$ 842	$1,262	$ 718	$ 719	$1,118	$ 623	$ 924
Stations	0	0	0	0	0	0	0	0	0
Property Taxes	95	121	118	115	112	120	128	148	118
Overhead	116	451	417	627	351	355	550	311	456
Subtotal	$ 445	$1,490	$1,377	$2,004	$1,181	$1,194	$1,796	$1,082	$1,498
Depreciation	752	730	718	631	652	630	660	630	670
Capital Funds	4,805	4,387	4,152	3,652	3,776	3,572	3,644	3,591	3,880
Subtotal	$5,557	$5,117	$4,870	$4,283	$4,428	$4,202	$4,304	$4,221	$4,550
TOTAL	$6,002	$6,607	$6,247	$6,287	$5,609	$5,396	$6,100	$5,303	$6,048

Note: The costs per mile were derived by dividing the total line-related costs for all lines in each category by the total miles of all lines in that category.

Prairie Rail Line Profiles
1974 Volume-Related Costs Per Carload in Box Cars

Item	Amount								Average All Categories
	I	II	III	IV	V	VI	VII	VIII	
Canadian National									
Running Track and Roadway Property									
Roadway Maintenance	$ 1.70	$ 1.72	$ 1.70	$ 1.73	$ 1.67	$ 1.68	$ 1.76	$ 1.72	$ 1.70
Property Taxes	.51	.48	.48	.49	.45	.45	.51	.49	.48
Overhead	.87	.87	.87	.88	.85	.55	.90	.87	.86
Subtotal	$ 3.08	$ 3.07	$ 3.05	$ 3.10	$ 2.97	$ 2.68	$ 3.17	$ 3.08	$ 3.04
Train Operations									
Locomotive Repairs & Servicing	3.20	3.53	3.38	3.60	2.64	2.63	4.32	3.24	3.12
Locomotive Fuel	2.33	2.33	2.33	2.25	2.35	2.36	2.34	2.37	2.34
Crew Wages	8.63	6.15	6.22	6.72	4.47	4.12	7.44	5.84	5.42
Control, Dispatching & Comm.	1.44	1.05	1.06	1.14	.77	.72	1.27	1.00	.93
Caboose Repair & Servicing	.24	.17	.17	.19	.12	.11	.20	.16	.15
Overhead	11.48	9.86	9.76	10.39	7.66	7.36	11.64	9.34	8.88
Subtotal	$27.32	$23.09	$22.92	$24.29	$18.01	$17.30	$27.21	$21.95	$20.84
Freight Car Operations									
Car Repair & Servicing	6.07	4.68	5.03	4.34	3.90	4.42	3.90	4.30	4.12
Car Cleaning	.48	.48	.48	.48	.48	.48	.48	.48	.48
Grain Doors	12.11	12.11	12.11	12.11	12.11	12.11	12.11	12.11	12.11
Communications	.29	.15	.16	.15	.14	.15	.14	.15	.14
Overhead	10.91	9.31	9.71	8.91	8.41	9.01	8.41	8.86	8.66
Subtotal	$29.86	$26.73	$27.49	$25.99	$25.04	$26.17	$25.04	$25.90	$25.51
Carload Costs									
Carload Billing	7.81	7.81	7.81	7.81	7.81	7.81	7.81	7.81	7.81
Loss & Damage	2.77	2.78	2.76	2.82	2.80	2.83	2.78	2.84	2.80
Communications	.12	.12	.12	.12	.12	.12	.12	.12	.12
Overhead	3.76	3.76	3.76	4.05	3.77	3.77	3.77	3.77	3.77
Total Operating Costs	$74.72	$67.36	$67.91	$68.18	$60.52	$60.68	$69.90	$65.47	$63.89

Prairie Rail Line Profiles
1974 Volume-Related Costs Per Carload in Box Cars

Item	Amount								Average All Categories
	I	II	III	IV	V	VI	VII	VIII	
Canadian National (Continued)									
Depreciation									
Running Track and Roadway Property	$ .46	$ .46	$ .46	$ .47	$ .45	$ .46	$ .47	$ .46	$ .46
Yard Track & Road	0	0	0	0	0	0	0	0	0
Road Locomotives	1.55	1.71	1.64	1.74	1.27	1.27	2.09	1.57	1.51
Yard Locomotives	0	0	0	0	0	0	0	0	0
Caboose	.08	.06	.06	.06	.04	.04	.07	.06	.05
Freight Cars	2.71	1.81	2.04	1.59	1.31	1.65	1.31	1.56	1.45
Signals & Communications	.31	.24	.24	.25	.19	.17	.28	.23	.21
Other Property	.17	.15	.15	.15	.13	.13	.15	.14	.14
Total Depreciation Costs	$ 5.28	$ 4.43	$ 4.59	$ 4.26	$ 3.39	$ 3.72	$ 4.37	$ 4.02	$ 3.82
Capital Funds									
Running Track and Roadway Property	1.55	1.56	1.55	1.58	1.52	1.52	1.61	1.57	1.54
Yard Track & Road	0	0	0	0	0	0	0	0	0
Road Locomotives	1.71	1.89	1.81	1.93	1.41	1.40	2.24	1.73	1.66
Yard Locomotives	0	0	0	0	0	0	0	0	0
Caboose	.15	.11	.11	.12	.08	.07	.13	.10	.09
Freight Cars	5.05	3.38	3.80	2.96	2.44	3.07	2.44	2.91	2.70
Signals & Communications	.38	.29	.29	.31	.23	.21	.33	.28	.26
Other Property	.46	.42	.42	.41	.35	.37	.42	.39	.38
Total Capital Funds Costs	$ 9.30	$ 7.65	$ 7.98	$ 7.31	$ 6.03	$ 6.64	$ 7.17	$ 6.98	$ 6.63
GRAND TOTAL	$89.30	$79.44	$80.48	$79.75	$69.94	$71.04	$81.44	$76.47	$74.34

Prairie Rail Line Profiles
1974 Volume-Related Costs Per Carload in Box Cars

Item	Amount								Average All Categories
	I	II	III	IV	V	VI	VII	VIII	
CP Rail									
Running Track and Roadway Property									
Roadway Maintenance	$ 1.47	$ 1.58	$ 1.49	$ 1.46	$ 1.43	$ 1.41	$ 1.48	$ 1.45	$ 1.43
Property Taxes	.30	.32	.30	.29	.29	.28	.30	.29	.29
Overhead	.66	.72	.68	.66	.65	.64	.67	.66	.65
Subtotal	$ 2.43	$ 2.62	$ 2.47	$ 2.41	$ 2.37	$ 2.33	$ 2.45	$ 2.40	$ 2.37
Train Operations									
Locomotive Repairs & Servicing	5.34	7.15	5.53	4.47	2.85	3.24	3.75	3.82	3.02
Locomotive Fuel	2.41	2.42	2.40	2.42	2.40	2.41	2.40	2.44	2.41
Crew Wages	12.94	13.61	9.76	7.14	4.47	4.32	7.25	6.96	6.92
Control Dispatching & Comm.	3.27	3.88	2.99	2.39	1.52	1.50	2.27	2.20	2.20
Caboose Repair & Servicing	.24	.26	.20	.17	.10	.11	.15	.15	.15
Overhead	10.46	12.23	9.32	7.48	4.85	5.20	6.86	7.04	5.62
Subtotal	$ 34.66	$ 39.55	$ 30.20	$ 24.07	$ 16.19	$ 16.78	$ 22.68	$ 22.61	$ 20.32
Freight Car Operations									
Car Repair & Servicing	8.94	7.04	7.52	6.57	5.95	6.69	5.97	6.51	6.27
Car Cleaning	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Grain Doors	16.25	16.25	16.25	16.25	16.25	16.25	16.25	16.25	16.25
Communications	.28	.26	.27	.26	.25	.26	.25	.26	.25
Overhead	7.46	6.81	6.97	6.64	6.44	6.68	6.44	6.62	6.54
Subtotal	$ 33.93	$ 31.36	$ 32.01	$ 30.72	$ 29.89	$ 30.88	$ 29.91	$ 30.64	$ 30.31
Carload Cost									
Carload Billing	17.25	17.25	17.25	17.25	17.25	17.25	17.25	17.25	17.25
Loss & Damage	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13
Communications	.25	.25	.25	.25	.25	.25	.25	.25	.25
Overhead	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86
Total Operating Costs	$101.51	$104.02	$ 95.17	$ 87.69	$ 78.94	$ 80.48	$ 85.53	$ 86.14	$ 83.49

Prairie Rail Line Profiles
1974 Volume-Related Costs Per Carload in Box Cars

Item	Amount								Average All Categories
	I	II	III	IV	V	VI	VII	VIII	
CP Rail (Continued)									
Depreciation									
Running Track and Roadway Property	$ .62	$ .66	$ .63	$ .61	$ .60	$ .60	$ .62	$ .61	$ .60
Yard Track & Road	0	0	0	0	0	0	0	0	0
Road Locomotives	1.25	1.66	1.29	1.05	.68	.77	.89	.98	.75
Yard Locomotives	0	0	0	0	0	0	0	0	0
Caboose	.07	.08	.06	.05	.03	.03	.04	.04	.04
Freight Cars	3.68	2.45	2.76	2.15	1.77	2.22	1.77	2.11	1.96
Signals & Communications	.47	.56	.43	.35	.23	.23	.34	.32	.33
Other Property	1.11	1.10	1.09	1.06	1.04	1.05	1.05	1.06	1.04
Total Depreciation Costs	$ 7.20	$ 6.51	$ 6.26	$ 5.27	$ 4.35	$ 4.90	$ 4.71	$ 5.12	$ 4.72
Cost of Capital									
Running Track and Roadway Property	3.05	3.28	3.10	3.02	2.98	2.93	3.08	3.02	2.97
Yard Track & Road	0	0	0	0	0	0	0	0	0
Road Locomotives	2.52	3.36	2.61	2.12	1.38	1.55	1.79	1.99	1.52
Yard Locomotives	0	0	0	0	0	0	0	0	0
Caboose	.20	.22	.17	.14	.08	.10	.13	.13	.13
Freight Cars	10.40	6.94	7.81	6.08	4.99	6.29	4.99	5.54	5.54
Signals & Communications	1.39	1.64	1.28	1.03	.67	.67	.99	.95	.96
Other Property	4.38	4.38	4.32	4.21	4.08	4.14	4.14	4.19	4.12
Total Capital Funds Costs	$ 21.94	$ 19.82	$ 19.29	$ 16.60	$ 14.18	$ 15.68	$ 15.12	$ 15.82	$ 15.24
TOTAL	$130.65	$130.35	$120.72	$109.56	$ 97.47	$101.06	$105.36	$107.08	$103.45