EFFECTS OF FREE TIME REDUCTION ON RAIL CAR UTILIZATION (FOREST PRODUCTS TRAFFIC)

BY

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ABSTRACT

This study examines one of the demurrage rules (free time allowance) and determines how changes in it would affect the utilization of cars carrying forest products. To achieve this objective, two substudies were carried out. The first was to determine the basic components of car activity found in a rail car load to load cycle. Knowledge of the percentage of time spent under customer control is of primary importance in determining to what extent a change in this time would affect the whole cycle. The second substudy was to analyse customer behaviour in order to predict how they would react to a change in free time.

Combining both results, this study estimates to what extent free time reduction for loading and unloading rail cars would affect car utilization in the Forest Industry. The conclusions are, that only small savings could be achieved by reducing free time to induce customers to release their cars faster, and much larger savings could be achieved by imporving other areas of car utilization such as yard and interchange operations. Those areas of improvements should be investigated in great detail by the railways.

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GLOSSARY OF TERMS

AVERAGE AGREEMENT	Demurrage tariff term referring to contract made between a shipper or receiver and a railroad whereby the shipper or receiver is debited for the time cars are held for loading or unloading beyond free time and allowed a credit for those cars which are released within 24 hours after placement. Demurrage charges are assessed monthly on any outstanding debits and all arbitraries.
BUNCHING	Demurrage tariff term for the delivery on the same day of inbound loads which were shipped on different days from the same origin over the same route; or delivery on the same day of empty cars ordered for different days.
CAR MOVEMENT	Study term relating to that portion of the line haul during which a freight car was actually being moved in a train.
CLAIM	Claims may be filed for bunching, weather conditions which hamper loading/unloading, frozen cargo, natural disasters, strikes, and railroad error.
COMPUTED FREE TIME	Study term indicating the actual amount of non-chargeable car time after placement for surveyed freight cars, including defined free time plus week-ends and holidays.
CONSTRUCTIVE PLACEMENT	Demurrage tariff term referring to the storage of cars on any available track by the carrier, when those cars are prevented from actually being positioned for loading or unloading for any cause attributable to the consignee or consignor; free time and demurrage are computed from time of constructive placement.
CREDIT	Demurrage tariff term used within average agreements which refers to the negative charge granted to a customer for cars released within 24 hours after placement; one credit offsets one debit.
CYCLE TIME	Railroad term for the total time period it takes a freight car to move from one loading to the next, including unloading, and empty movement to a point of reloading; also referred to as load to load cycle time.

DEBIT	Demurrage tariff average agreement term which connotes the charge per car per day or fraction of a day, for the first four days following expiration of free time; debits may be offset by credits earned on cars released before the expiration of the first 24 hours of free time under average agreements.
DEMURRAGE	The concept of placing a charge on railroad freight cars when those vehicles are held beyond a free period allowed for loading or unloading or other shipping functions.
DEMURRAGE DAY	Study term for the time period used for computing demurrage charges. The demurrage day is a 24 hour period which starts at the first 7:00 A.M. following placement.
FREE TIME	Demurrage definition of the time allowed for loading and unloading freight cars at the shipper or receiver's dock without charge, normally 48 hours.
INBOUND	Study term referring to freight cars underload moving into a terminal area for unloading by consignee or receiver.
INTERCHANGE	Railroad term for the location, period of time, or process of transferring rail cars from one carrier's line to that of another.
INTERLINE	Railroad description of the movement of rail cars originating on one carrier's line and terminating on another line.
LINE-HAUL	Railroad term for the portion of a railroad freight car cycle where the car is actually moving between origin and destination; a cycle will consist of a loaded line-haul and, often, an empty line-haul.
NOTIFICATION	Demurrage Tariff terminology officially connoting advice by the railroad to a consignee of the arrival of cars; required for such as team track delivery. Sometimes notification is provided by railroads as a courtesy in other arrival cases.
NOTIFY	Study term indicating the point in time when a customer was notified of the arrival of a car which is to be placed on a team track.
OFF LINE CARS	Railroad term for system cars when on another carrier's tracks.

OUTBOUND	Study term referring to empty freight cars moving into a consignor location for loading and subsequent shipment.
PER DIEM	A daily allowance or charge; railroad term for the daily railroad freight car rental charge paid by one carrier to another when a car is on that carrier's lines at midnight. This rate now carries a charge for mileage as well.
PLACED	A study term meaning the same as placement. Demurrage Tariff term referring to the process and point in time when a railroad delivers a freight car to a consignee's or consignor's loading or unloading location. Used as the starting point for demurrage time computations, unless the car is constructively placed.
PULL	Railroad term for the process and point in time when a railroad physically removes a freight car from a consignee's or consignor's loading or unloading location.
RELEASE	Railroad term indicating a point in time when the consignee or consignor notifies the railroad that a freight car is ready to be pulled, either having been loaded or unloaded.
SWITCH DAY	Study term indicating the period of time between arrival of scheduled switching service on one day to the scheduled next arrival, with a minimum specified time between.
SWITCHING	Railroad term for the movement of cars from one place to another within established geographical limits.
YARD	Railroad term referring to a system of tracks used for making up trains, conditioning and storage of cars.

CHAPTER I

INTRODUCTION

On July 11, 1973 C.N.R. and C. P. Rail announced that the "free time" allowed to load and unload cars would be reduced from 48 to 24 hours, effective August 1, 1973. The railways justified the change by stating that there was a severe rail car shortage in Canada and that a "free time" reduction would ameliorate the situation. Immediately the Canadian Industrial Traffic Leage challenged this justification (a letter sent by the president of the League to the railways on July 27, 1973 is reproduced in appendix I). On July 31, 1973 the Canadian Pulp and Paper Association was successful in having the railways' proposed reduction in "free time" suspended. Before the public hearing scheduled to take place before the Canadian Transport Commission on September 4 started, the railways withdrew their proposal.

After this unsuccessful attempt to reduce "free time", both railways and shippers agreed to review the whole demurrage problem. The Canadian Industrial Traffic League coordinated the formation of an Industry Steering Committee "to consist of those industry associations who have shown an interest in the rail car demurrage questions and associated problems."[1] The railways also formed a Railway Steering

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[1] Traffic Notes, Issue #4685, Nov. 13, 1973.

Committee. The whole demurrage question will be reviewed jointly later,[2] the ultimate goal being to improve car utilization in the interest of both shippers and carriers.

1 - OBJECTIVE OF THE STUDY

The objective of this study is to determine to what extent free time reduction for loading and unloading rail cars would affect car utilization in the Forest Industry.

For this objective to be achieved, the study will have to determine (i) the basic components of car activity found in a typical rail car load to load cycle, both for US and Canadian traffic and (ii) the impact of a reduction of free time on customers' loading or unloading time.

The study examines one aspect of the demurrage rules (free time allowance) and determines how a change in this rule could improve car utilization and result in better service.

2 - IMPORTANCE OF THE STUDY

A study dealing with possible improvements in car utilization is important for both the railways and the Forest Industry.

The three major Canadian railways involved in the transportation of forest products from the Canadian Pacific Region are investing more and more money in new equipment to be used primarily for the transportation of forest products. By the end of 1974, CNR will have increased its lumber fleet by 2700 cars (30% increase since

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[2] See Appendix II.

spring 1973). During the same period C. P. Rail will increase its fleet by 940 cars (15% increase). By April 1974, the provincial government owned B. C. Railways will have added 1600 cars to its lumber fleet. In June 1974, a new railcar manufacturing plant owned by the B. C. government will be able to deliver cars of any type at a rate of 1000/year from its location at Squamish.

The railways carried 213,851,000 tons of revenue freight in 1972 (3,810,000 carloads, 13.7% of which consisted of forest products). Of all the forest products from B. C., 70% of the lumber, 78% of the plywood and 33% of the woodpulp are carried by rail. Practically everything else is carried by water. Trucking is too expensive although a spokesman of Rustad Brothers, located on the B. C. Railways industrial site in Prince George, recently declared that his "firm had even gone to the extreme of trucking lumber to U. S. border states at horrendous cost, a move made possible only by the recent high price of lumber."[3] However the Forest Industry has been developing around either rail or water transportation and no other practical and economical mode is predicted to become important in the near future.

Rail car utilization is the key word both for the railways because of the large amount of capital invested in new equipment, and the shippers because of revenue losses resulting from a lack of available rail cars. The methodology developed in this study could be used to determine the effects of free time reduction on car utilization in All Canadian industries. Such a study would form a very

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[3] B. C. Lumberman Magazine, Dec. 1973 issue.

important part of the more general problem: how can car utilization be maximized through changes in demurrage rules.

3 - METHODOLOGY OF THE STUDY

In order to achieve the objective of the study, the car movement cycle of cars loaded with forest products and the loading and unloading operations of shippers and receivers of forest products must be investigated.

The typical load to load cycle of rail cars carrying forest products either to Canada or the U. S. can be determined from the analysis of car movement data obtained from the operating information systems of the railways.

Possible changes in loading and unloading operations can be determined from the analysis of the answers to a questionnaire[4] mailed to 130 firms (either shippers or receivers of forest products).

Those possible changes are used as a basis to determine what the length of a load to load cycle might have been if "free time" had been reduced January 1, 1973. Comparing this cycle to the real one which was achieved, it is possible to determine the extra number of carloadings which could have been completed between January 1 and July 31, 1973.

The following diagram summarizes the methodology of the study.

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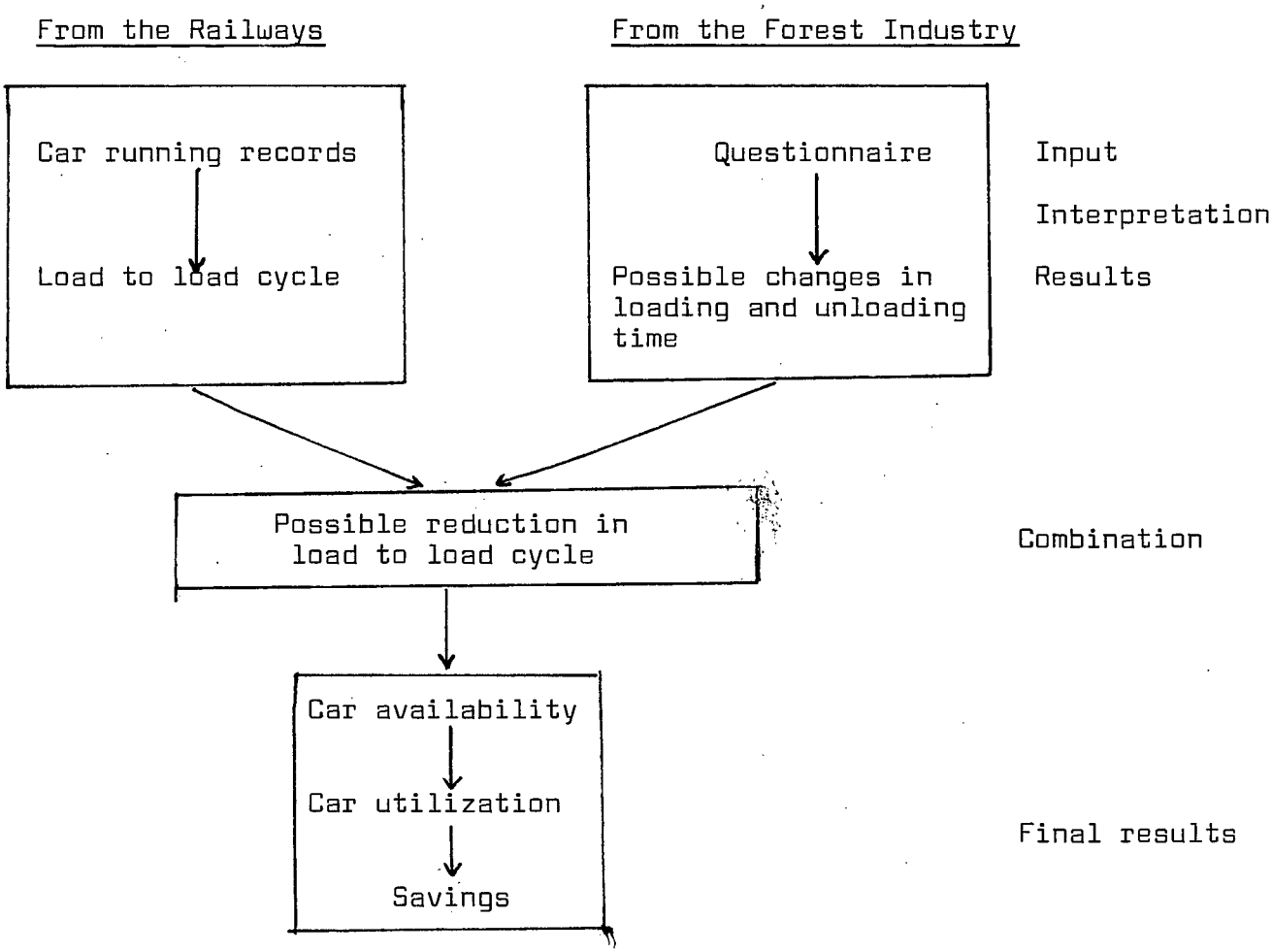
[4] See Appendix III.

Figure 1

Study Outline



4 - LIMITATIONS OF THE STUDY

The sample of cars chosen to determine the load to load cycle excludes certain types of cars:

(i) railcars carrying forest products to be unloaded in a harbour are excluded because of the special nature of demurrage rules applied to export traffic through harbours (the proposed free time reduction would not have affected this traffic);

(ii) cars not primarily allocated to the transportation of the forest products are also excluded since this study covers only the Forest Industry. However, in a period of serious shortage, equipment available is used for any type of traffic. This might cause a bias in the results.

In order to have a sample of cars allocated primarily to forest products, the survey should cover the period prior to the national railways strike of August 1973. However car running records are kept only for 40 days. Some of the cars surveyed were on tracks at the beginning of January 1974.

The questionnaires are sent only to Canadian shippers and receivers of forest products. Surveys from U. S. receivers would have had to be combined with information from the particular railroad serving their plant and time as well as geographical constraints made this impossible. However, excellent information on U. S. receivers as a whole was obtained from the Reebie's study.[5]

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[5]Reebie Associates, Towards An Effective Demurrage System, U. S. Department of Commerce, July 1972.

5 - OUTLINE OF THE STUDY

Chapter 2 analyses data from Statistics Canada and the railways on changes in freight traffic and car supply since 1967 and predictions for the near future. This analysis also establishes the importance of rail transportation for Canadian industries.

To determine the relative importance of railcar detention, Chapter 3 describes the basic components of car activity found in the typical load to load cycle. The basis for these findings stems from an analysis of a sample of car movements from the three major carriers involved in the transportation of forest products.

Chapter 4 presents the basic rates and rules covering rail car demurrage in Canada with those existing in the U. S. and proposals from the Reebie's study. Emphasis is placed on the analysis of time allowance built into demurrage rules: the allowance of free time for the customer handling of the car; the calculation of a demurrage day, the weekend, and holiday arrangements.

Chapter 5 analyzes the rail customer answers to a questionnaire and interviews, and establishes a basis for determining the impact of changes in free time.

Chapter 6 studies the effects of free time reduction using the findings from the questionnaire and from the load to load activity sample. The effects are described in terms of potential savings which could have been achieved if "free time" reduction had taken place on January 1, 1973. This chapter concludes with recommendations on how to approach the general problem of demurrage in Canada, and suggests further studies to be undertaken.

CHAPTER II

FREIGHT TRAFFIC AND CAR SUPPLY

1.- FREIGHT CARS IN SERVICE ON CANADIAN RAILWAYS

a) Size of the Fleet

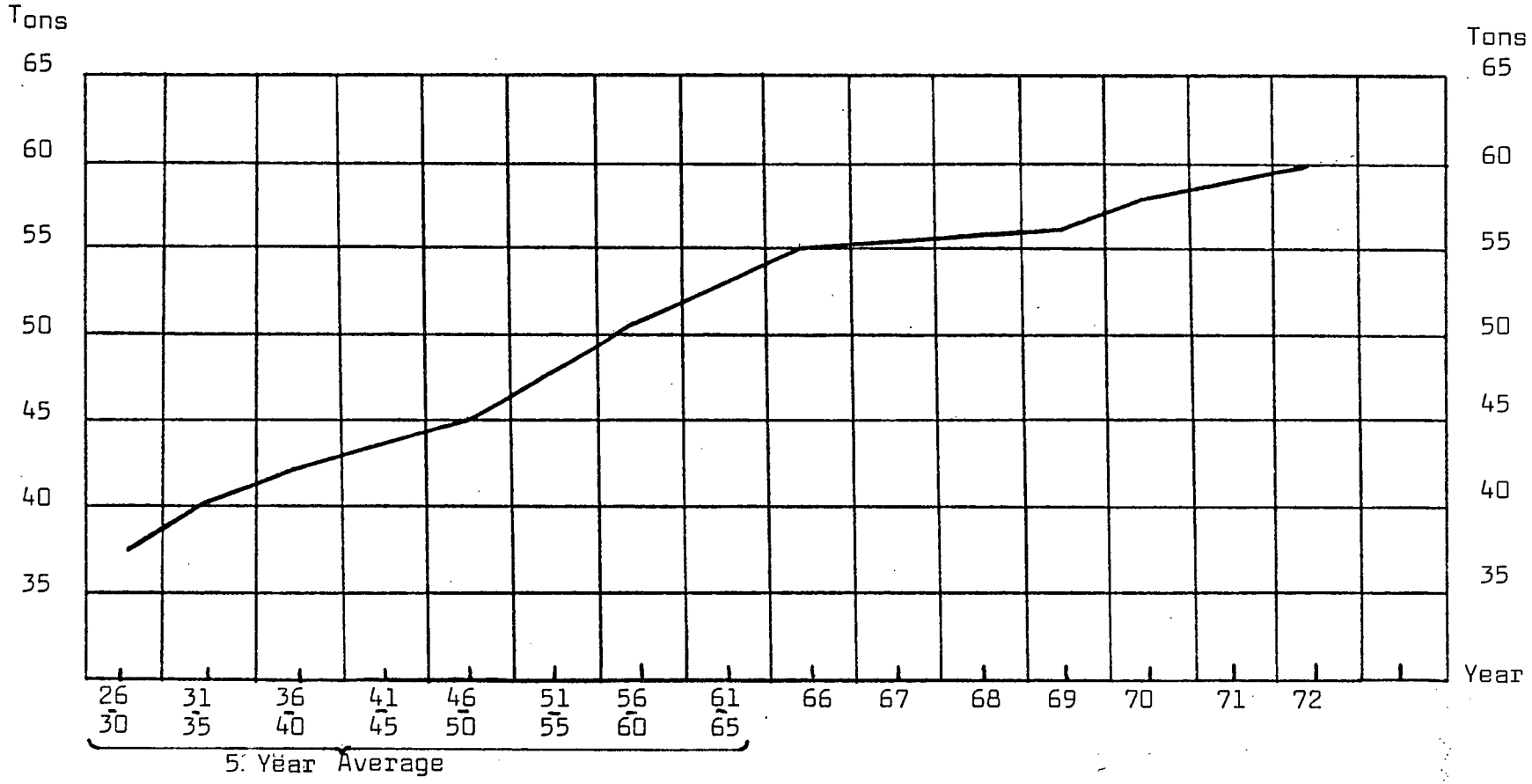
There were 186,541 freight cars in the service of common carrier railways in Canada on December 31, 1972, a decrease of .91% since December 31, 1968. The total carrying capacity of those cars was 11,178,770 tons at the end of 1972, an increase of 5.8% since the end of 1967. The average capacity of a car has been increasing continually since 1920 (see figure 2) reaching 59.9 tons in 1972. Although the total number of cars has been decreasing, the total carrying capacity has been increasing.

The number of freight cars in service over the past five years has been varying according to railways and car types. Tables 1 and 2 compare the number of cars in service and their capacity for each type of car from 1968 to 1972. Tables 3 and 4 break down the data from tables 1 and 2 to compare the number of cars in service and their capacity for CNR, C. P. Rail and B. C. Railways in 1968 and 1972.

As tables 1 and 2 show, specialized cars (flat, covered hoppers, ore) have both increased in number and in capacity. These cars are usually allocated to the transportation of one commodity and

Figure 2

Average Freight Car Capacity



Source: Railways Transport, Part III: Equipment, track and fuel statistics 1972 - Statistics Canada #52-209.

Table 1. Total Number of Cars in Service on the Canadian Railways

Car Type	1968	1969	1970	1971	1972	% increase over 5 years
Box cars	103,903	101,819	101,746	99,904	97,162	(6.49)
Gondola & Ballast	23,301	23,577	23,614	22,762	22,833	(2.01)
Hopper	21,660	22,480	24,496	25,175	25,539	17.91
Flat	16,002	17,415	18,043	19,728	20,414	27.57
Refrigerator	8.074	7,459	6,673	5,403	5,292	(34.36)
Ore	6,722	6,684	6,735	6,819	7,241	7.72
Auto	3,646	3,752	2,175	2,280	2,607	(28.5)
Stock	2,987	2,945	2,827	2,687	2,583	(13.53)
Tank	538	511	487	468	474	(11.87)
Others	1,421	1,538	1,938	2,080	2,396	68.61
Total	188,254	188,268	188,738	187,306	186,541	(.91)
Leased (included in total)	4,960	7,551	12,187	14,545	17,515	257.15
Company cars	15,876	15,981	16,053	16,124	15,573	(1.91)

Source: Railway Transport. Part III: Equipment, track and fuel statistics 1972. Statistics Canada #52-209.

Table 2. Total Car Capacity Available on the Canadian Railways (in tons)

Car Type	1968	1969	1970	1971	1972	% increase over 5 years
Box cars	5,007,476	4,931,428	4,983,266	4,938,809	4,830,771	(3.53)
Gondola & Ballast	1,609,017	1,647,660	1,672,575	1,634,963	1,675,261	4.12
Hopper	1,641,437	1,702,490	1,952,003	2,011,977	2,051,258	24.97
Flat	827,521	920,272	1,054,553	1,183,606	1,251,581	51.24
Refrig-erator	425,476	411,196	366,401	306,172	310,832	(26.94)
Ore	570,896	568,396	572,236	577,468	620,986	8.77
Auto	248,003	260,708	139,548	152,041	170,388	(31.3)
Stock	129,274	128,104	123,968	119,028	115,568	(10.6)
Tank	27,412	26,218	25,263	24,329	24,545	(10.46)
Others	79,890	88,540	108,870	113,520	127,880	60.07
Total	110,566,388	10584,382	10584,8382	11061,869	11178,770	5.8

Source: Railway Transport. Part III: Equipment, track and fuel statistics 1972. Statistics Canada #52-209.

Table 3. Number of Cars in Service on C.N.R., C.P.Rail and B.C. Railways

	1968			1972			% increase or (decrease)		
Car Type	CNR	CPR	BCRCR	CNR	CPR	BCR	CNR	CPR	BCR
Box cars	54,439	47,191	44243	49,965	43,583	1,830	(8.07)	(7.65)	314.03
Gondola & Ballast	12,538	8,373	592	11,648	8,461	1,033	(7.43)	(1.05)	74.5
Hopper	8,755	10,333	122	11,411	11,538	107	30.34	11.66	(12.3)
Flat	7,888	6,662	706	12,508	7,020	1,002	58.57	5.37	41.93
Refrigerator	5,038	3,002	24	4,343	913	24	(13.8)	(69.59)	0
Ore	2,125	1,125	0	2,083	1,223	0	(1.980)	8.71	0
Auto	1,068	2,575	0	1,677	922	0	57.02	(64.19)	0
Stock	1,528	1,405	24	1,334	1,235	14	(12.7)	(12.1)	(41.67)
Tank	25	269	17	25	190	24	0	(29.37)	41.18
Others	1,413	0	0	2,395	0	0	69.5	0	0
Total	94,772	80,932	1,927	96,389	75,085	4,019	1.71	(6.5)	108.56
Leased (included in total)	0 (2834 in 1969)	382	170	10,403	2,358	155	336.37*	564.4	(8.82)
Company cars	8,710	5,527	299	0,063	4,838	479	4.05	(12.47)	60.2

Source: Railway Transport Part III: Equipment, truck and fuel statistics 1972. Statistics Canada #52-209.

* percentage increase between 1969 and 1972

Table 4. Total Car Capacity Available on C.N.R., C.P. Rail and B.C. Railways

Car Type	1968			1972			% increase or (decrease)		
	CNR	CPR	BCR	CNR	CPR	BCR	CNR	CPR	BCR
Box cars	2,564,830	2,322,189	29,960	2,427,700	2,176,535	141,154	(5.35)	(6.27)	372.14
Gondola & Ballast	828,200	601,690	47,067	671,590	648,920	79,968	(18.91)	7.85	69.9
Hopper	673,420	796,850	9,778	948,900	938,618	872	40.91	17.79	(10.81)
Flat	425,198	368,330	56,584	685,162	440,758	81,080	61.14	19.66	43.29
Refrigerator	268,645	155,000	1,307	252,905	55,990	1,307	(5.86)	(63.88)	0
Ore	151,610	78,040	0	148,210	86,130	0	(2.24)	10.37	0
Auto	69,450	121,340	0	113,820	56,218	0	63.89	(53.67)	0
Stock	66,730	60,080	1,254	61,260	53,580	728	(8.2)	(10.82)	(41.95)
Tank	750	14,840	250	500	11,500	1,200	(33.33)	(22.5)	463.41
Others	79,000	0	0	127,830	0	0	61.81	0	0
Total	5,127,833	4,518,559	146,800	5,581,877	4,468,068	314,945	8.85	(1.12)	114.54

Source: Railways Transport Part III: Equipment, track and fuel statistics 1972. Statistics Canada #52-209.

their turn around time is better than the average. Some of the cars are more expensive to build; however their utilization is above average and so is their return on investment. The incentive to invest in more cars of this type is strong. On the contrary return on investment in the plain, multipurpose box car is small. It is not surprising that number and total carrying capacity of the box cars have been declining over the years.

The number of auto cars has been decreasing with the introduction of the tri-level automobile carrier, and so has been the number of refrigerator cars with the disappearance of ice stations (new cars are very expensive because they must contain mechanical refrigeration units).

It is interesting to note that as CNR was increasing both the number of its cars (total) and its total carrying capacity, C. P. Rail was doing exactly the opposite (see tables 3 and 4). C. P. Rail invested less than C.N.R. in box, hopper, flat, refrigerator, auto, stock and tank cars. C. P. Rail effort was greater than C.N.R. only in gondola, ballast and ore cars.

Information on B. C. Railways total freight car fleet has been added in tables 3 and 4. The large percentage increase in cars of some types (box, gondola, ballast, flat and tank cars) is due to the fact that B. C. Railways had very few of these cars to start with and was mainly using cars from other railways.

b) Maintenance and Investment

Information on cost of maintaining freight cars and on capital expenditure on new freight cars is difficult to obtain. Information

from Statistics Canada is consistent, but the one from annual reports of the railways varies with each company's way of reporting. Table 5 summarizes data available.

c) Leasing

Before terminating this section on freight cars in service in Canada, the growing importance of leasing should be mentioned. There are basically two types of leasing:

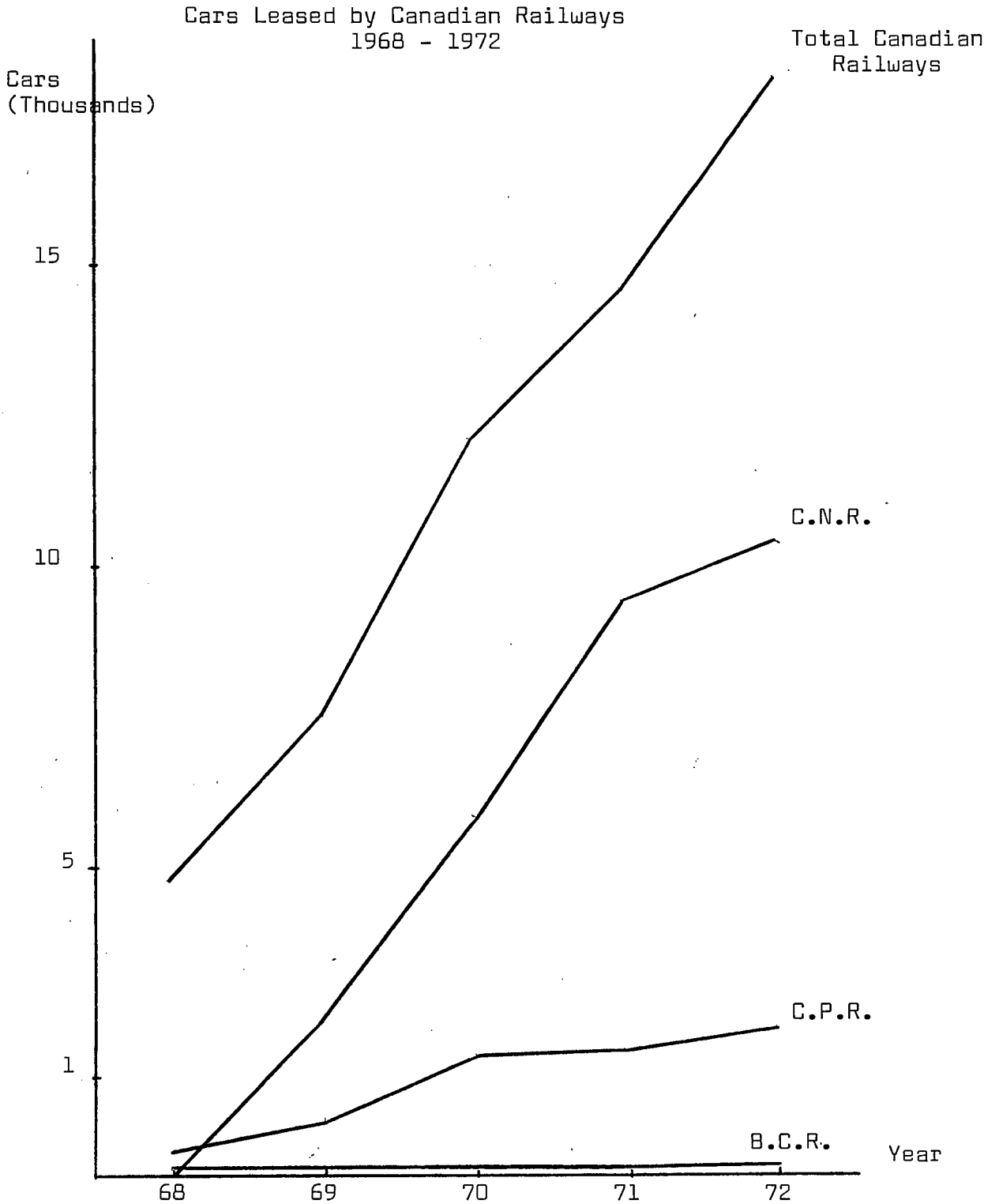
(i) long term financial leases where the railways virtually have the same rights and responsibilities as on their own cars (these cars are always marked with the particular railroad reporting marks;

(ii) short term operating leases where firms lease railcars from leasing companies and the leasing company pay for the maintenance, insurance and taxes on the cars.

The number of cars in service under those two arrangements is increasing rapidly (see figure 3).

The railroads find it more advantageous to lease cars because of constraints on capital available for investment. Also the leasing expense is fully tax deductible. This type of lease is advantageous in the short run but more expensive in the long run. In table 6, the leasing expenditure is shown as part of equipment rent in operating expense. This is however misleading because equipment rent (Dr and Cr) also includes per diem and mileage expenditures paid to and received from other railroads for use of each other's cars. The annual net per diem and mileage balance fluctuates highly from year to year depending upon the particular railroad traffic level and the

Figure 3



Source: Railway Transport. Part III: Equipment, track and fuel statistics 1972. Statistics Canada #52-209.

Table 5. Railways Expenses (Partial Statement) 1972.

	CNR	CPR	BCR	Total Canada
Total operating expense	1,129,314,652	733,409,558	36,326,000	2,070,606,935
Total equipment maintenance	209,840,354	147,020,250	7,790,225	395,020,061
Total car maintenance	84,879,055	52,720,641	2,326,060	152,331,302
Freight car maintenance	63,856,128	47,846,424	NA	NA
Freight car maintenance as % of total operating expense	7.52	6.52	NA	NA
Maintenance/car	662.42	637.23	NA	NA
Total capital expenditure	173,176,376	NA	70,715,332	NA
New equipment	51,550,023	NA	NA	NA
New freight cars $			13,735,946	NA
#	2,423	NA	NA	NA

Source: Railway Transport Part II Financial Statistics 1972. Statistics Canada #52-208.

NA: not available

Table 6. 1972 Leasing Expenses.

	CNR	CPR	BCR	Total Canada
Total operating expense	1,129,314,652	733,409,558	36,326,000	2,070,606,935
Equipment Rent Dr.	49,452,801	34,754,370	3,672,221	102,564,399
Equipment Rent Cr.	19,530,607	28,452,922	2,054,160	51,997,775
Equipment Rent Net	30,012,194	6,301,448	1,618,061	50,566,624

Source: Railway Transport Part II - Financial statistics 1972. Statistics Canada #52-208.

average number of foreign cars on line compared with the average number of its own cars on a foreign line.

Private firms, because of uncertainty of car supply from the railways, sometimes prefer to lease private cars. The cost is higher, but the service better. The leasing companies spend a great deal of energy to keep their cars moving. As table 7 shows, there was a decrease in the number (and total capacity) of private cars in service in 1971. This results from a C.T.C. order forcing the retirement of a large number of 8,000 gallon capacity tank cars over 50 years old. In 1972 there was an important increase both in number and total capacity. No numbers are yet available for 1973 but fractional data seems to indicate another important increase in number of cars of this type in service.

2 - FREIGHT CARS IN SERVICE IN THE FOREST INDUSTRY

Both C.N.R. and C. P. Rail have been decentralizing leaving more and more room for regional initiative. Railways management (and also industries) believe that problems in car supply can be solved on a regional basis. The result for the Mountain Region (B. C. and Western Alberta) was the creation of a fleet of cars assigned to the transportation of forest products. Table 8 summarizes information on the types and numbers of these cars. It should be noted that many of these cars, although assigned to Forest Products are sometimes used for other commodities.

Relief from the car shortage comes slowly as new equipment is put in service. Table 9 shows equipment acquisitions for C.N.R., C. P. Rail and B. C. Railways for 1973 and 1974. B. C. Railways

Table 7. Private Cars Registered in Canada (number and total capacity available)

Car Type	1968	1969	1970	1971	1972	% increase or (decrease)
Auto	-	-	-	33	33	0
				1,485	1,485	0
Box cars						
Box cars	-	-	-	193	292	51.3
				14,248	21,600	51.6
Flat	-	-	-	45	45	0
				3,117	3,117	0
Hopper	-	-	-	687	2,862	316.6
				64,398	282,578	338.8
Gondola	-	-	-	295	235	(20.34)
				29,500	23,500	(20.34)
Tank	-	-	-	14,207	14,296	.63
				914,572	1,069,474	17
Refrigerator	-	-	-	100	311	211
				4,850	15,320	215.87
Total	15,823	16,090	16,211	15,560	18,074	14.22
	1,118,421	1,164,869	1,205,947	1,032,170	1,417,074	26.7 (over 5 years)

Source: Railway Transport Part III: Equipment, track and fuel statistics 1972. Statistics Canada #52-209.

Note: upper number = number of cars registered in the category
lower number = total capacity available in the category (tons)

Table 8. Equipment Currently Being Used for the Transportation of Forest Products (June 1973)

Car Type	Assignment	No. of Cars	
	C.N.R.		
Bulkhead Flat	Pool #8120 (CN) - Bldg.Prod.	649	
	Pool #8115 (DWC) - Bldg. Prod.	1,780	
Box-double door (DWC)	Pool #8135- Lumber	1,711	
Other flat & box	Not specifically assigned	5,000*	
Total		9,140	
	C.P. Rail		
40 Double Doors*		3,700	
50' Double Doors*		1,000	
48' Bulkhead Flat Cars		200	
51 Bulkhead Flat Cars		1,300	
Total		6,200	
+ 66' Bulkhead Flat Cars acquired in 1973 (leased)		200	
	B.C. Railway		
Box cars*		1,830	
Gondola*		1,033	
Flat*		1,002	
Total		3,865	
TOTAL			19,405

* Cars not exclusively used for the transportation of forest products.

Source: This information was provided during interviews with executives from C.N.R., C.P.Rail and B.C.Railways, December 1973.

Table 9. Acquisition of Equipment for Transportation of Forest Products (June 1973 - December 1974)

Car Type	No. of Cars	Delivery Date
C.N.R.		
Acquisitions		
Bulkhead flat-70 tons-52'8"	400	May-Sept.1973 (delivered June
Bulkhead flat-70 tons-52'8"	400	1973-Jan.1974 (160 del. as of Nov.6, 1973)
Bulkhead flat	300	1974 (Preliminary)
Box-70 tons-52'8"-18' comb. plug & sliding doors	300	Feb.-March 1974
Woodchip	140	Jan.-Feb. 1974
Box-50'6"-12' plug door	500	4th quarter 1974 (Preliminary)
Modifications		
Box-modify existing cars by general upgrading & widening doors to 12'	660*	1973 (433 delivered as of Oct.26, 1973)
Total	2,700	
C.P. Rail		
1974 Program		
52'8" Double doors	140	
40 Double doors - rebuilt	400	
42'8" double doors (probable acquisition)	100	
Gondolas for Chips - modified	100	
66' Bulkheads - to be leased in 1974	200	
Total	940	

Table 9 (continued)

B.C. Railway

Car Type	No. of Cars
New 52'8" bulkhead flat cars on order	1500
- 70 of the 180 produced have been received and balance of the order are being delivered at the rate of 10 cars per day	
Boxcars leased from Foss Launch & Tug Co.	500
- 100 are now in service and balance is scheduled for delivery by May 1974	
Shippers' leased cars to be in service from BCR origins	1800
- Final delivery by April, 1974	
Note: These 1800 cars are made up of 1300 existing shippers' leased cars, plus an intended 500 bulkhead flat cars.	
New woodchip cars to be in service by year end	100
New woodchip cars scheduled for construction at BCR Squamish Car Building Facilities in 1974	300
Used cars to be purchased and converted for the handling of veneer	100
Total	4300
TOTAL	7,940

Source: This information was provided during interviews with executives from C.N.R., C.P. Rail and B.C. Railways, December 1973.

especially will be expanding rapidly, more than doubling the size of its fleet by the end of 1974.

3 - TOTAL FREIGHT TRAFFIC IN CANADA

Canada's major railways will probably register an all time record for carrying freight in 1973, despite the summer railway strike. 198,700,000 tons of traffic were moved in the first 10 months of 1973, a 14.1% increase over the same period in 1972.[6] Figure 4 shows that the daily average of tons loaded was much higher in 1973 than in 1972 (except for August, month of the strike). Freight is the main source of income for the railways and it has been growing both in absolute value and in percentage of total operating income since 1967 (see tables 10 and 11). Demurrage has been increasing in dollar value, but stayed practically the same as percentage of operating income.

4 - FOREST PRODUCTS FREIGHT TRAFFIC

Table 12 shows that 13.78% of the total carloadings of revenue freight on Canadian Railways consisted of forest products. They occupy the third rank after mine products (30.82%) and wheat and other grain products (14.92%).

The carloadings of forest products in Canadian Railways have been increasing over the years (figure 5 provides a monthly comparison between 1971, 1972 and 1973) and will continue in the future. A forecast of B. C. forest products shipments to Canada and the U. S. for 1974 is reproduced in appendix IV. Demand for lumber is expected to stabilize because of a decline in home construction. Plywood shipments

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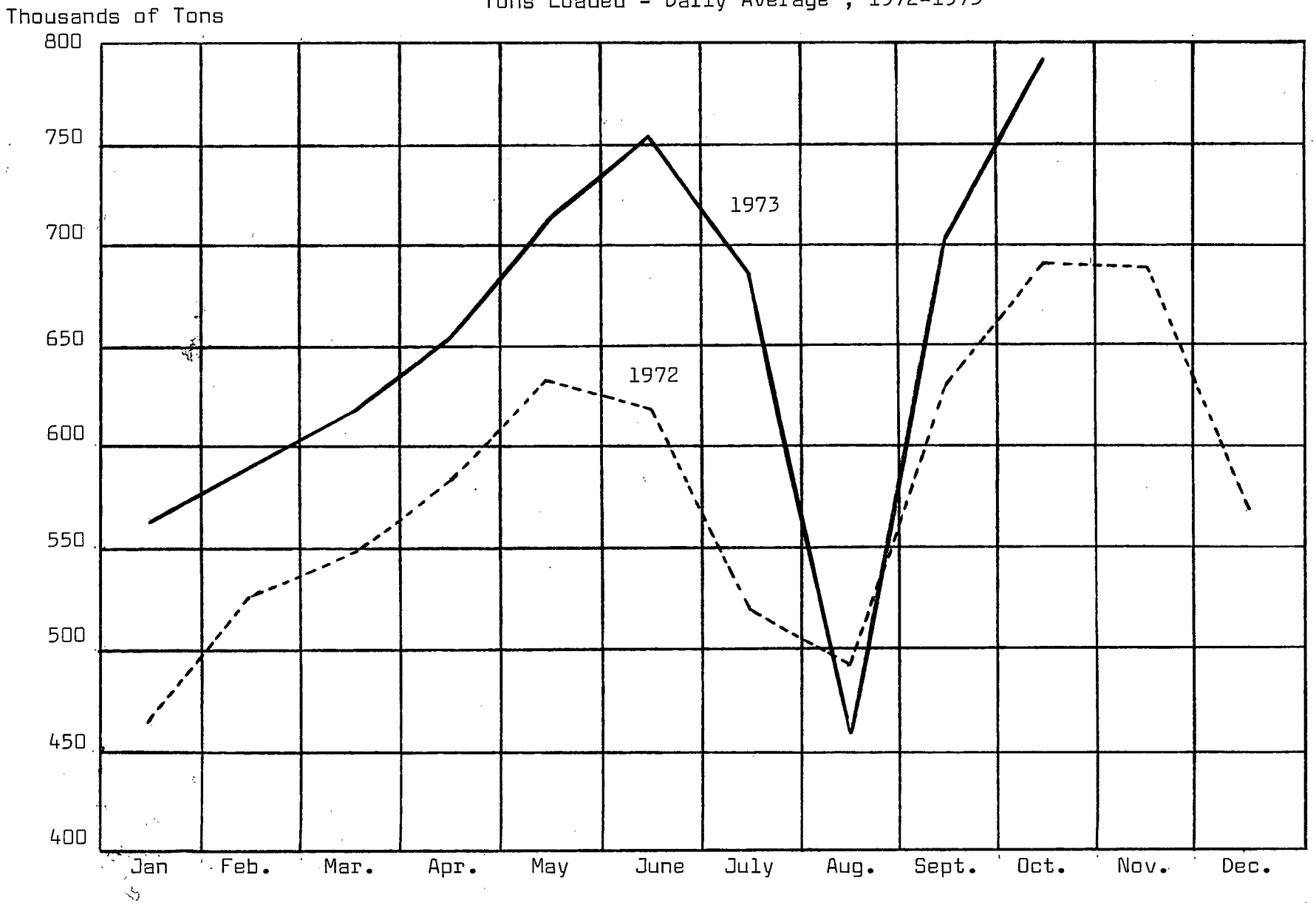
[6] Railway Carloadings October 1973. Statistics Canada #52.201 Vol. 50, #10.

Figure 4

Tons Loaded - Daily Average*, 1972-1973



*Daily average calculated by dividing tons loaded by the number of days in the month.

Source: Railway Carloadings October 1973, Statistics Canada #52-201, Vol.50 #10.

Table 10. Railways Revenue - Total Canada

	1967	1968	1969	1970	1971
Total operating revenue	1,519,392,966	1,568,962,071	1,583,801,797	1,679,759,268	1,805,660,746
Freight Revenue $	1,222,168,443	1,267,364,933	1,331,263,562	1,435,967,153	1,579,704,147
Freight Revenue % of total oper.rev.	80.44	82.89	84.05	85.49	87.49
Demurrage $	7,718,572	7,209,795	8,654,931	9,105,506	9,729,335
Demurrage % of total oper. rev.	0.51	0.47	0.55	0.54	0.54

Source: Railways Transport Part II - Financial Statistics 1972 - Statistics Canada #52-208

Table 11. 1972 Railways Revenue

	C.N.R.	C.P.R.	B.C.R.	Total Canada
Total Operating Revenue	1,177,077,258	796,406,266	44,671,508	2,195,907,534
Freight Revenue $	855,053,162	638,505,514	42,180,423	1,688,106,880
Freight Revenue % of total oper. revenue	72.64	80.17	94.42	76.87
Demurrage $	5,973,163	3,398,735	137,717	10,654,154
Demurrage % of total oper. revenue	0.47	0.43	0.31	0.48

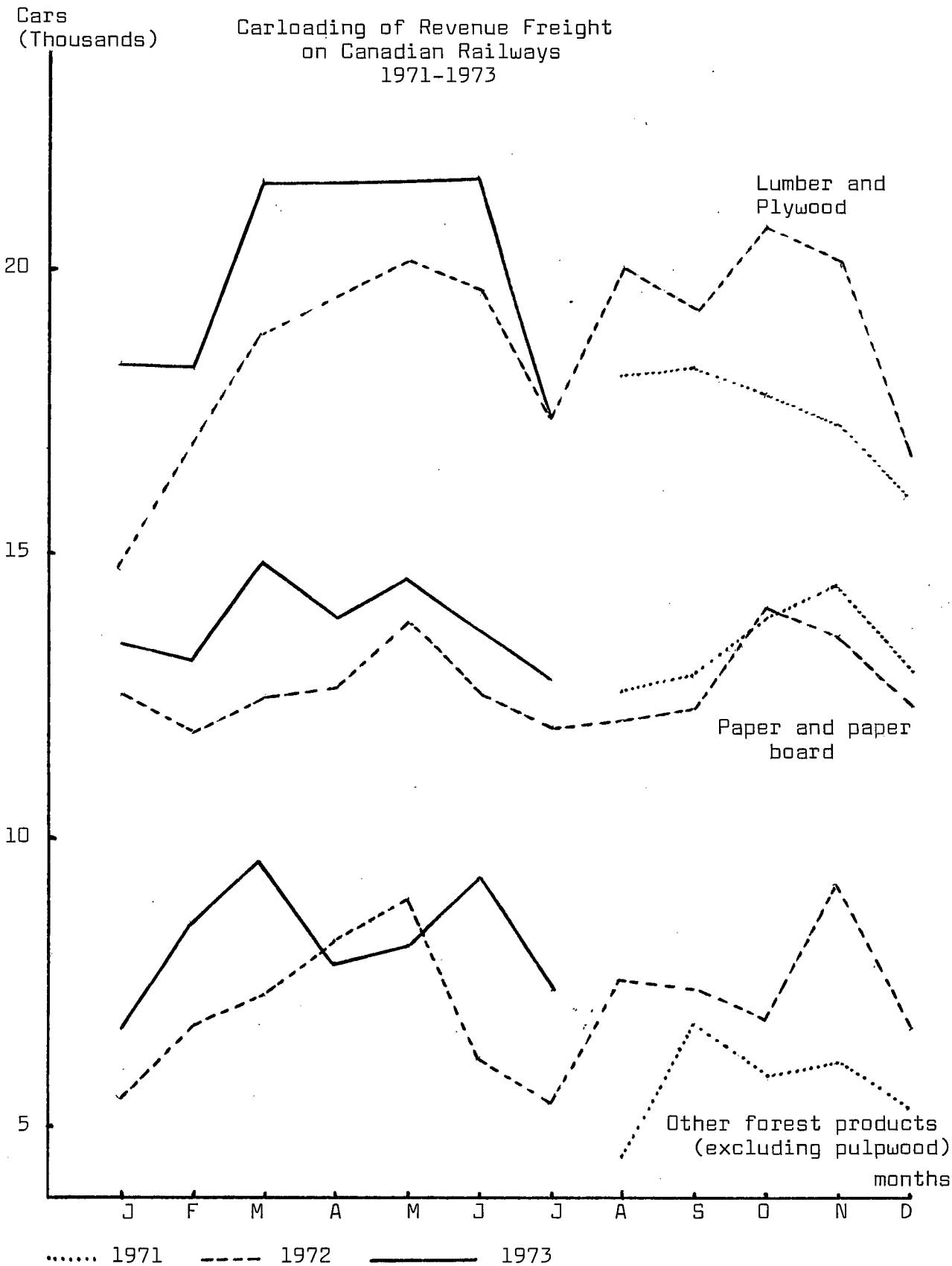
Source: Railways Transport Part II - Financial statistics 1972. Statistics Canada #52-208.

Table 12. Freight Carried on Canadian Railways in 1972 (percentage)

Wheat and other grain products	14.92
Agricultural products	1.22
Animals and their products	.77
Prepared food	1.72
Mine Products	30.82
Forest Products	13.78
Steel and metals	3.09
Vehicles and parts	3.46
Petroleum	5
Chemical	1.78
Paper and paperboards	3.97
Manufactured products - miscellaneous	19.48

Source: Canadian Statistical Review January 1974. Statistics Canada Publication #11-003, Volume 4G, #1.

Figure 5



Source: Canadian Statistical Review January 1974, Statistics Canada Publication #11-003 Vol.49 #1.

will be slightly higher. The demand for pulp and newsprint is expected to grow by about 10%. The demand for railcar equipment from the Forest Industry will therefore be higher in 1974 than in 1973.

The information on shipments' destinations is very incomplete and is reproduced in Table 13. Most of the sawmill production is for export. Three quarters of the produced plywood stays in Canada with the rest mainly exported to Europe. About 93% of shingles and shakes are exported mainly to the U. S. (90%).

5 - PRESENT CAR SHORTAGE

The following section is a review of the arguments most often brought forward by representatives of the railways and of the Forest Industry on the causes of car shortage. It is not intended to be a complete study of the problem.

a) Both shippers and carriers blame the U. S. for the car shortage. The chaotic state of some railroads in the U. S. have resulted in a 45 day turn around time (average) for a car loaded at a B. C. mill and going to the U. S. (average speed of a car between 3 and 5 miles per hour). The number of Canadian cars in the U. S. has been increasing constantly since January 1972 (91% increase in two years); during the same time the number of U. S. cars in Canada rose by 39% (see table 14). This situation is very alarming and the process will be difficult to reverse.

b) The railways blame the shippers for inaccurate forecasts. In 1972 the Forest Industry predicted a 5% increase in production in 1972. However demand was higher than expected and production rose by 17%.

c) The B. C. Railways is often accused by the shippers of

Table 13. Destination of Forest Products

	Sawmills (million board feet)	Plywood (million square feet,3/8" basis)	Shingles & Shakes (thousand square)
Production	4,265.9	2,006	2,573
Canada	808.7	1,559	166
Export	3,457.2	447	2,407
U.S.	2,290	2	2,372
Europe	480.4	440	14
Japan	399.8	1	
Others	285	4	23

Source: Council of Forest Industries, Annual Report 1972.

Table 14. Canadian Cars in U.S. and U.S. Cars in Canada

Date	Canadian Cars in U.S.	U.S. Cars in Canada
1-1-72	28,779	22,892
7-1-72	42,654	28,331
1-1-73	48,318	28,741
6-1-73	51,157	27,028
9-1-73	44,578	32,565
12-1-73	94,935	31,823

Note: While the figures include Canadian cars in Mexico and Mexican cars in Canada, few cars in these categories would actually be involved.

Source: Letter from W. H. Van Slyke, Executive Director and Chairman of the Association of American Railroads, December 19, 1973.

having been irresponsible in pressing its lines northwards to open new areas for development and to provide access to vast new timber stands and at the same time failing to provide the necessary equipment to handle the new traffic.

d) Shippers blame the government for obliging C.N.R. and C. P. Rail to provide an adequate number of cars to move grains, therefore diverting some of their cars from the transportation of forest products.

e) Railways blame the shippers for not loading their cars to full capacity. Shippers admit this fact but say it takes time to convince their customers to accept bigger shipments.

f) Economists accuse railways of poor management, not knowing in precise terms what poor utilization of a freight car truly costs, particularly missed opportunity costs. Without this knowledge it is difficult to determine areas to be improved.

6 - EFFECTS OF THE PRESENT CAR SHORTAGE

The following is a review of the main effects of rail equipment shortage on the Forest Industry, its employees and the Provincial Government. No dollar measure of those effects was attempted.

a) Production

There was a curtailment of production at several mills.

b) Employee incomes

The curtailment of production resulted in a loss of man days of employment.

c) Stumpage revenue

Lost production accounted for a reduction of stumpage revenue to the Provincial Government.

d) Potential rail shipments

Due to inadequate car supply several companies shipped less products by rail causing losses of potential revenues to the carrier.

e) Alternative modes of transportation

Some shippers were forced to truck their products either directly to the customer or to another railroad for shipment to the customer and had to absorb additional transportation costs.

f) Changes in market mix

Some companies were forced to sell their products in a different market at prices substantially below those existing in their traditional markets.

g) Additional inventory costs

The shortage of railway equipment forced companies to carry inventories that were substantially higher than what they consider to be their optimum or standard operating inventory.

h) Late shipments

Some companies lost revenues because they could not guarantee firm delivery dates and, therefore, had to sell their product below the then existing market levels.

i) Inventory deterioration

Due to the fact that lumber and woodchip inventories were stockpiled for long periods of time, and therefore exposed to inclement weather conditions, some companies experienced a decline in product value.

j) Intangible costs

The most serious of these is the affect of the reputation of the company as a reliable shipper. There is the problem of claims from customers that are dissatisfied with the timeliness on the product that has deteriorated.

CHAPTER III

RAIL CAR ACTIVITY PATTERNS

To place demurrage in the proper perspective it is important to determine the extent of shipper/receiver rail car detention as a portion of the total load to load cycle. The smaller detention as percentage of total cycle, the less influence of demurrage on rail car utilization. The information collected will not only establish the influence of rail customers on car turn around, but it will also provide a base to aid in predicting the effect of free time reduction on car utilization.

The influence of rail customers on car utilization is greater than time spent handling the freight at origin and destination. Shippers have influence through their decisions on diversions and reconsignments which take cars out of direct pattern movements and introduces time consuming interruptions. There exists both in Canada and the U. S. several holding points towards which cars are directed, waiting for their final destination. Also regular C.N.R. and C. P. Rail can be redirected at any time to any destination in North America; special marked cars (DWC for C.N.R. and CPI for C. P. Rail) have some restrictions regarding reconsignment because they are American built and must be used only in international service.

Also the fact that rail customers may elect to locate mills and warehouses in low density areas served by minimum service branch lines has a direct effect on car turn around.

Those added operations have an adverse influence on equipment utilization. They affect car turnaround, but they are not under the direct control of demurrage rules; therefore this study did not try to analyze each of these events nor to determine their specific influence on car cycle time.

The load to load cycle of a car is defined as being the total time period it takes the car to move from one loading to the next, including unloading and empty movement to the point of reloading. It takes many events, at least nine, to complete one load to load cycle (as described in figure 6). They can be grouped into four categories (as done in figure 7): origin (time spent on the shipper siding and at the terminal), loaded line haul, destination (time spent on receiver siding and at the terminal), empty line haul. Since it was not possible to obtain the above information for U. S. traffic, the load to load cycle of a car carrying products to the U. S. was divided as follows: origin, origin to the U. S. border, time in U. S., U. S. border to Canadian destination.

1 - SOURCE OF INFORMATION

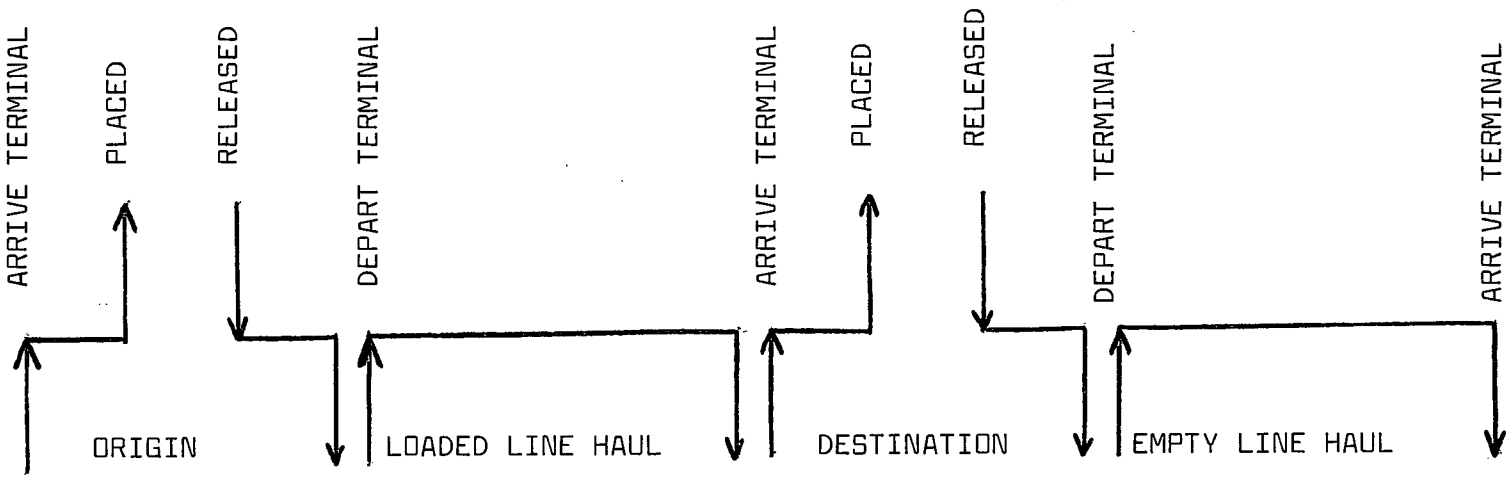
CNR and C. P. Rail have computerized systems designed to provide daily information on car location if required. Local executives were very helpful in trying to obtain car running records but encountered two types of problems:

(i) C. P. Rail's system keeps information regarding car movements only for approximately 40 days and when studying car cycles, it is difficult to find cars which completed a full cycle during 40 days (30 days for C.N.R.'s system);commun

(ii) communication between different departments and regions is not always as easy as one would hope it to be and it took several months to get the required information.

Figure 6

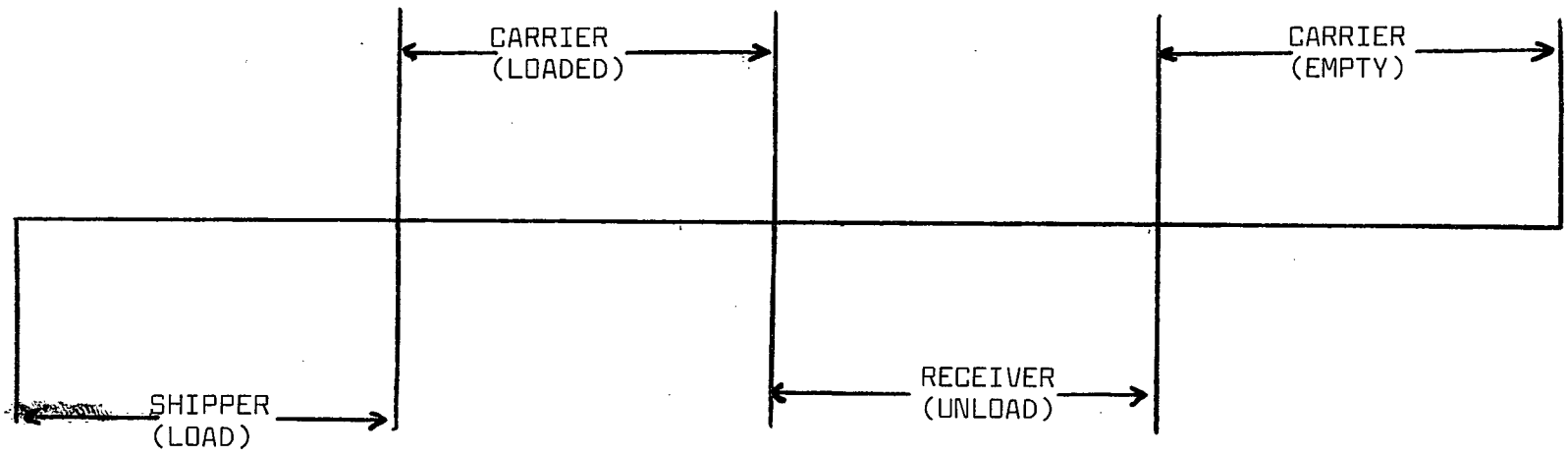
Complete Load to Load Cycle



Source: Reebie Associates, Towards An Effective Demurrage System, U.S. Department of Commerce, July 1972.

Figure 7

Basic Load to Load Cycle



Source: Reebie Associates, Towards An Effective Demurrage System, U.S. Department of Commerce, July 1972.

Time constraints did not allow study of car records from B. C. Railways whose car information is not computerized. However some data on B. C. Railway cars transferred on C.N.R. tracks were obtained from C.N.R. information system.

The sample of cars studied was carefully chosen in cooperation with C.N.R. and C. P. Rail executives. The selection was made so types of cars, origin and destinations would be represented in the same proportion as they are in the traffic of forest products from the Mountain Region.

2 - RESULTS

Detailed results from Canadian traffic and Canada - U. S. traffic are presented separately in tables 15 and 16 and then combined to obtain average load to load cycles in table 17. The results from table 17 were obtained by allocating different weights to data from tables 15 and 16. Those weights are a function of 1973 share of traffic between the three railroads (40% for C.N.R., 33% for C. P. Rail, 22% for B. C. Railway, 5% miscellaneous) and within each railroad, the portion of traffic carried by different types of cars (C.N.R.: Flat 38%, Box 62%; C. P. Rail: Flat 27%, Box 73%; B. C. Railways: Flat 35%, Box 65%).

The load to load cycles found in the study of Canadian traffic were closely centered around the mean of 28.51 days and 43.21 days for U. S. traffic. As seen in figure 8 certain cars exhibited cycles as short as 19 days and less, and others as large as 35 days and more, but over 85% of the cars measured demonstrated cycle time within five days of the mean (Canadian traffic).

Table 15. Load to Load Cycle (days) Canadian Traffic

		Origin	Loaded Line Haul	Destination	Empty Line Haul	Total Cycle
C.N.R.	Box	3.1	5.96	8.59	12.1	29.75
	Bulkhead Flat	2.70	5.98	7.58	10.1	26.36
C.P.Rail	Bulkhead Flat	2.73	5.83	8.67	8.19	25.42

Size of sample: C.N.R. Box 100
Bulkhead 50
C.P.Rail Bulkhead 50

Table 16. Load to Load Cycle (days) Canada - U.S. Traffic

			Origin	Origin to U.S.Border	U.S.	US Border to Canadian Destination	Total Cycle
C.N.R.	West Route	Bulkhead Flat	2.1	6.9	25.2	8	42.2
		Box	2.7	6.9	25.2	8	42.8
	East Route	Bulkhead Flat	2.1	9.8	13	12	36.9
		Box	2.7	9.2	15.3	13.8	41
C.P.Rail	West Route	Bulkhead Flat	2.68	6.98	28.84	9.55	48.05
B. C. Railways	West Route (via CN)	Bulkhead Flat	4.7	6.9	25.2	8	44.8
		Box	6.1	6.9	25.2	8	46.2

Size of sample - CNR and B.C.R.: unknown. The results were provided by CNR and no information regarding the size of the sample could be obtained.

C.P.Rail - 65 bulkhead flat cars (Total population 600 cars, half of them being in the U.S. on an average day.)

Figure 8

Frequency Distribution of Cycle Times

(Canadian traffic)

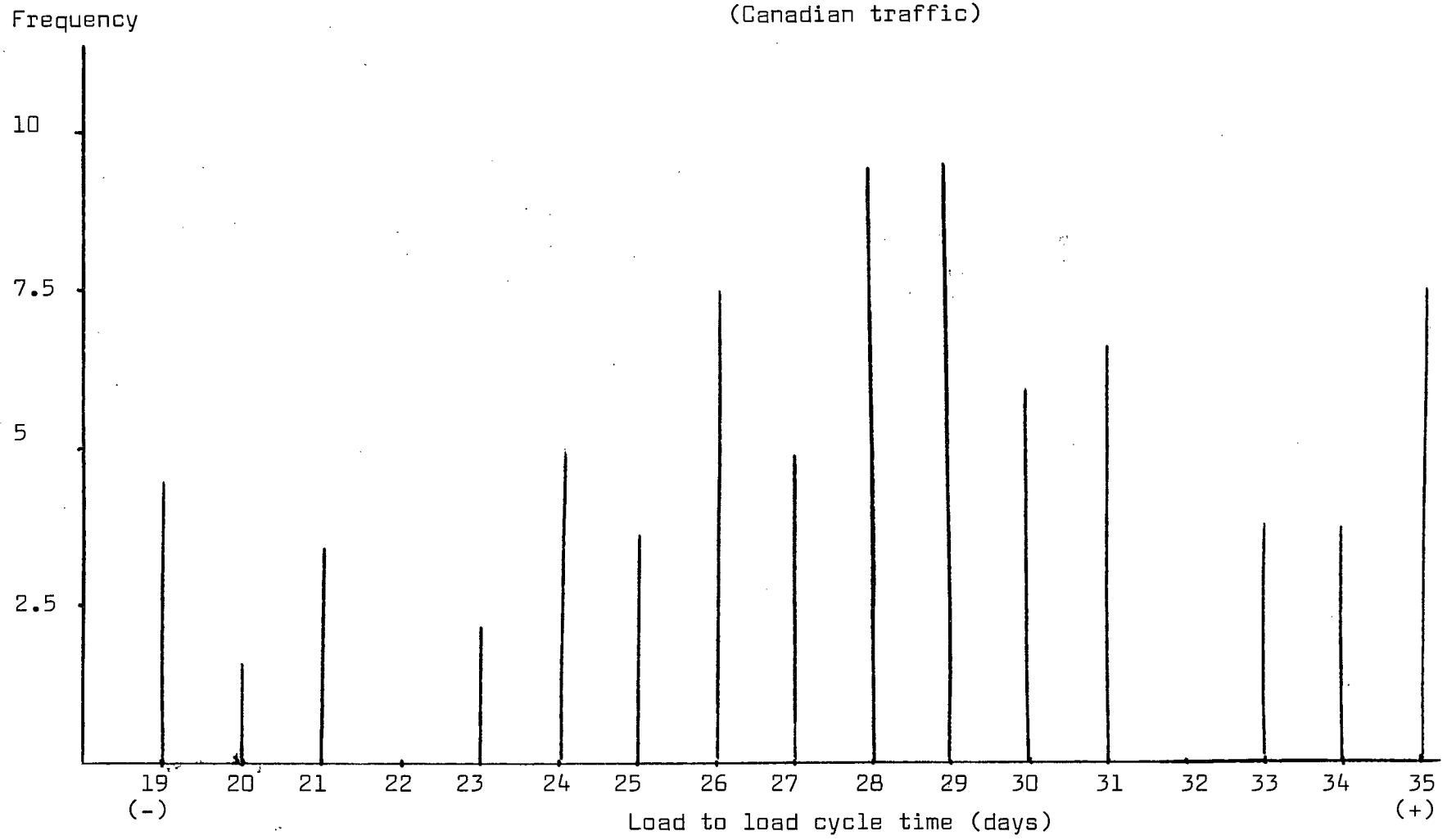


Table 17. Average load to load cycle (days) (Cars carrying forest products)

	Origin	Loaded Line Haul	Destination	Empty Line Haul	Total
Canadian traffic	2.98	5.94	8.44	11.15	28.51

	Origin	Origin to US Border	U.S.	U.S.Border to Can. destination	Total
Canada - U.S. traffic	3.7	7.65	22.2	9.66	43.21

Analysis of Table 17 results indicates some facts of interest:

(i) loading is the smallest component of a car cycle (10% for Canadian traffic, 8.8% for U. S. traffic);

(ii) unloading is 2.8 times longer than loading in the case of Canadian traffic;

(iii) cycle of cars allocated to U. S. traffic is 1.5 times longer than the cycle of cars staying in Canada.

The time spent at the origin and destination include time on the customer siding and terminal time. Cars sometimes have to wait for several days between the time they arrive at the terminal and the time they are placed. The same happens where a car is released. Therefore the time spent at the origin and destination is greater than the time spent for loading and unloading. This breakdown of times is very difficult to obtain from the railways' records. However it was possible for 50 of the 110 C. P. Rail cars studied to determine the portion of time under shipper control as a percentage of time at origin. For the 50 cars 69% of origin time was spent on shipper siding or 1.9 days out of 2.73 days). It would be very hazardous to extropolate results from such a small sample to all shippers of forest

products. However it reinforces the conclusions from table 16, 17, and 18, that the opportunity for major improvements in car utilization lies in improving carrier operating practices and car distribution procedures. Time spent on the shipper siding is small compared to the total cycle.

It is interesting to compare the results from tables 15, 16 and 17 with the average load to load cycle of a C.N.R. car (average for the total fleet of cars).

Table 18. Load to load cycle components (C.N.R. cars)

	days	% of total
en route empty	1.24	6.1
en route loaded	1.51	7.4
unloading	2.75	13.5
loading	2.75	13.5
standing in yard loaded	5.1	25
standing in yard empty	7.03	34.5
Total	20.38	100

Source: John Grahvick, Vice President, Research and Development, C.N.R.
Symposium - Centre for Transportation Studies, U.B.C. Feb. 28, 1974.

The load to load cycle of cars carrying forest products is higher than average and so are each component of the cycle. Two of the reasons are further destinations and often longer unloading process (compared with wheat, coal and potash for example).

CHAPTER IV

DEMURRAGE

1 - HISTORY OF DEMURRAGE[7]

In the late 1800's various individual railroads in the U. S. and in Canada, began to charge demurrage on their own. A demurrage system was difficult to enforce by a single carrier because of competitive pressure, and soon, the need for a unified set of demurrage rules was recognized by everybody.

In 1906, the Board of Transport Commissioners for Canada, after a comprehensive study of the matter, promulgated a set of rules to be applied by all railways under their jurisdiction. Two years later the American Railway Association proposed a National Code of Demurrage Rules. After a year of hearings, a uniform code was adopted in the U. S. and became effective in 1910.

In 1952 the Canadian Industrial Traffic League Inc. submitted an application to the Board to have the demurrage tariffs reviewed and consolidated into a single tariff. As a result of this application, joint meetings were held between the railways and the various shippers' organizations and agreement was reached on a number of modifications and changes which were published in tariff CTC #6 effective January 1, 1960.

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[7]Canadian Institute of Traffic and Transportation. Certificate Course 2nd edition, Aug. 1967.

This tariff forms the basis for the demurrage rules existing now, although during the years, exceptions and modifications have been included producing the more complex version of tariff CTC #8 effective January 5, 1972. The rules of this latest tariff will be discussed in section 4 of this chapter.

2 - PURPOSE OF DEMURRAGE

The Pocket Oxford Dictionary (4th edition revised in 1966) defines the term demurrage as follows: "rate or amount payable to ship (or truck or railway) owner by charterer for failure to load or discharge ship (or truck or railcar) within the time allowed".

A very interesting case was considered by the Supreme Court of Canada in which the Court discussed the principle underlying demurrage as follows:

> "Its (Demurrage) appropriateness to railway carriage can be assumed to have been recognized and acted upon both in England and in North America certainly from the middle of the Nineteenth century.
>
> Delay in loading or unloading carloads of freight violates the implied understanding when equipment is placed at the disposal of a shipper or consignee that no more than reasonable time shall be taken for either purpose. The profitable and efficient use of equipment is an important item of costs reflected in the freight rates charges and is an essential in good railway management. That a railway is to supply expensive equipment in order to furnish gratis, a storage means for shippers and consignees, reveals, on its mere statement, its own absurdity.
>
> Under the Act (Railway Act) the Board of Transport Commissioners for Canada, has no jurisdiction in effect to compel a railway to give a service or suffer an economic detriment of such nature without appropriate compensation; and although that tribunal may cancel tariff of rates and tolls, it does so only on the ground that they are unreasonable, either too high or too low, or are unjustly discriminatory; and if it does not substitute rates of its own, the carrier is

> entitled to submit other rates and have them passed upon until the unreasonableness or unjust discrimination is found to be eliminated."[8]

Demurrage has been acknowledged as an important tool in stimulating railcar utilization. By providing penalties for long detention of railcars it encourages customers to release this equipment back to the carrier somewhat sooner than they otherwise would be inclined to. Before the institution of demurrage charges, it was common practice for shippers to retain cars for loading and unloading just as they pleased, creating artificial car shortages. Ultimately the improvements in utilization which demurrage stimulates should work to the benefit of carriers and shippers alike. This principle is accepted by both parties. However when the railways proposed to reduce "free time" to improve railcar utilization, rail users challenged this justification and demurrage has now become a controversial subject; various parties have questioned whether the demurrage charge should be considered as a storage charge, a rental of equipment, a penalty for delay or an incentive for early release.

Demurrage tolls are not made primarily for the purpose of revenue but as a deterrent against the detention of equipment and to compensate the railway, in a limited way, for the use of its cars.

3 - ADMINISTRATION

The Canadian Car Demurrage Bureau has been appointed by the railways as their instrument in handling all matters relating to demurrage. The bureau is responsible for publishing the tariff and

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[8]Reference #347512 North West Line Elevators Assoc. and United Grain Growers Ltd. vs CPR et al., cited in Canadian Institute of Traffic & Transportation, Certificate Course 2nd edition Aug. 1967.

enforcing it. The function of the bureau is restricted to making sure that railroad customers are billed for and pay for all charges that are due. Travelling representatives make periodic inspection at all agency stations to ensure that the rules are applied fairly and without unjust discrimination.

4 - CANADIAN RULES

The rules discussed in this section are from tariff CTC #8 effective January 5, 1972. Comparisons will be made with U. S. rules and also those proposed by Reebie's Associates in their study "Toward an Effective Demurrage System".

a) Special arrangements

These are demurrage charges published in tariffs other than the one mentioned above. Examples are special regulations governing: (a) export or import traffic, (b) unloading excess from overloaded cars or other special arrangements concerning export traffic at Eastern Canadian ports, (c) detention charges on refrigerator cars, and (d) detention charges for cars on the tracks of the National Harbours Board at the port of Montreal.

b) Rule 1:

Cars subject to the rules and exceptions. All cars held for or by consignors or consignees except:

- private cars: loaded on tracks of owner
  : empty anywhere
- refused and unclaimed freight, subsequently sold by the railroad
- freight awaiting water transportation
- freight bound for U. S. while held at specific stations (U. S. tariff applies).

Instead of having one tariff with many exceptions (as it is now the case in the U. S. tariff), the Reebie's study proposes to have most of the exceptions cancelled and to have the remaining published in a different tariff.

c) Rule 2: Notification

Notice of arrival is sent after arrival of the car at destination. The consignee is held to have been notified at 7:00 A.M. of the day following transmittal (or date of mailing of notification). For firms with private sidings, the delivery of a car on such siding constitutes notification of arrival.

d) Rules 3 and 4: Delivery of cars for loading and unloading

After notification, the carrier has to specify the exact location of the car. Any delay in giving such information is added to the free time allowance. Also when delivery is delayed because of the lack of technical facilities at the railway terminal (not enough cranes available for example) the free time starts from the first 7:00 A.M. after notice has been sent that the cars can be loaded or unloaded. Each consignee is considered to have had uninterrupted use of the facility when one or more cars are placed.

e) Rule 5: Free time allowance

"48 hours free time shall be allowed for loading or unloading all commodities." Saturdays, Sundays and holidays are excluded in figuring the free time allowances. This modification was added to tariff CTC #6 effective January 1, 1960, to bring this rule in line with the 5 day week applicable generally in industry and by the railways' own freight offices.

"Twenty-four hours, if necessary, shall be allowed for any or all of the following purposes:

- for clearing customs;
- for giving orders for special placement except that consignee served by another than public delivery track or industrial interchange track shall not be entitled to an allowance for this purpose if delivery is taken on such track;
- for diversion, reconsignment or reshipment in the same car provided that no such allowance shall be made for a reconsignment which does not involve the movement of the car to a point beyond the same industry of delivery yard;
- when cars are stopped in transit for completion of loading, or partial unloading;
- in that part of Canada, Thunder Bay and west, only 24 hours free time shall be allowed for loading grain during the months of September, October and November...".

The free time allowances are basically the same in the U. S.

In their study, Reebie's Associates proposed that one of the following rules should be chosen:

(i) to define the demurrage day as the time between two switches with a minimum free time of 22 hours and no extra days;

(ii) a free time allowance of 24 hours from placement with Saturdays, Sundays and holidays free when part of the free time;

(iii) a free time allowance of 24 hours from the first 7.00 A.M. after placement and free weekends and holidays when part of free time.

f) Rule 6: Computing time

"Time is computed from the first 7:00 A.M. after notice of arrival is sent or given to the consignee."

"Forwarding directions for a car loaded outbound, sent by consignor by mail to an agent of this railway will be considered as having been received after 7:00 A.M. of the date received, when mailed on a prior date provided car is ready for forwarding at that time".

"When a car is appropriated for loading prior to 11:00 A.M. time shall be computed from 7:00 A.M. of the date appropriated, provided the car was in an accessible position at 7:00 A.M. If the car was not in such position at 7:00 A.M. or if loading is commenced at or after 11:00 A.M., time shall be computed from 7:00 A.M. of the following day."

Free time allowance is also extended when bad weather renders loading or unloading impossible during business hours.

g) Rules 7 and 8: Demurrage charges

For the first four days following free time allowance, the charge per day or fraction is $10. Thereafter the charge per day or fraction is $20. The only exception is for cars held because of industrial strike. In the U. S., the charge per day or fraction is $10 for the first 4 days after free time allowance expired, $20 for the two following days and $30 for each day thereafter.

Reebie's Associates proposed that for the first two days following free time, the charge should be equal to the per diem rate of the car which was detained and $20 for each day thereafter.

h) Rule 9: Claims

Claims for frozen or congealed lading, run-arounds, bunching-

cars for loading or unloading "must be presented in writing to the carrier's agent within sixty days after the date on which the bill for demurrage is rendered."

i) Rule 10: Non payment

"If payment of demurrage charges properly due on cars held on public delivery tracks be refused, delivery of only such car or cars on which demurrage charges are due may be withheld by means of sealing or locking or by placing where such cars shall not be accessible."

For cars on other than public delivery tracks "delivery may be suspended."

5 - AVERAGE AGREEMENT

The average demurrage agreement has been in effect in the U. S. since 1909, but does not apply in Canada. It's principle is to provide an incentive to the shipper to release cars quickly because by doing so, some of the demurrage expense is eliminated. Credits are granted for each car released in 24 hours or less and debits are charged when cars are held more than 48 hours. At the end of the month, the customer is charged only for excess debits accumulated. This reduces the number of demurrage claims and leads to monthly billing of accounts. However from the viewpoint of the railroads averaging has a serious disadvantage. The Reebie's study found that "it reduces the effective demurrage rate to roughly half the published rate." Also companies who have accumulated credits during the first part of the month tend to slow down the return of their cars toward the end of the month (credits cannot be carried forward from one month to another).

6 - VARIABLE DEMURRAGE

For the most part demurrage is applied uniformly to all car types, commodities, and months throughout the year. Various shipper organizations have argued unfairness is caused when relying upon a rate with a uniform application and suggested the creation of a variable demurrage system.

Under such a system rates would vary with car type, commodities carried and time of the year. This would require the identification of the demand pattern of different car types, the value of each car, and handling practices of each commodity. Problems exist not only with identification of the variables, but also with enforcement of a multistructured demurrage plan.

7 - DEMURRAGE STATISTICS

Unfortunately very little statistical data are available from the Canadian Car Demurrage Bureau. Table 19 shows the percentage of cars released within free time. It shows that this percentage has been increasing since January 1972, and that the percentage of cars earning demurrage is slightly higher in Eastern Canada. It also shows that very few carloads are subject to demurrage. Between 3% and 7% of cars in Canada are held beyond free time. However this table does not show how many cars earned $10 a day and $20 a day, nor the number of cars earning demurrage at loading and unloading.

It would also be most instructive to have information on demurrage charges for each type of commodity at a time when companies ask for some kind of variable demurrage. These data could be compiled from the accounting records of the Demurrage Bureau in Winnipeg and

Montreal and be used to identify which industries are penalized by the present system.

Table 19

DEMURRAGE IN CANADA

Month	No. of Cars Reported		Percent Released Within Free Time		Number of Cars Earning Demurrage	
	Western	Eastern	Western	Eastern	Western	Eastern
1972						
January	144,077	193,268	95.79	92.85	5,860	13,803
February	163,952	198,751	96.45	93.12	5,751	13,662
March	171,723	244,676	96.46	93.34	6,020	16,177
April	171,918	228,859	97.17	93.52	4,820	14,821
May	206,710	238,660	97.32	93.54	5,562	15,416
June	214,112	248,430	97.33	94.14	5,687	14,562
July	192,144	219,428	96.99	93.10	5,648	15,121
August	191,856	221,414	96.92	93.66	5,970	14,031
September	218,398	240,675	96.41	93.63	7,767	15,329
October	202,078	242,330	96.63	93.92	6,748	14,721
November	192,917	241,953	96.88	93.57	5,791	15,535
December	185,556	215,667	97.47	92.92	4,637	15,257
1973						
January	180,627	232,786	96.78	93.24	5,674	15,736
February	174,076	234,786	96.53	93.19	6,074	15,978
March	189,489	249,031	97.16	93.63	5,392	15,846
April	197,427	257,976	97.27	94.34	5,290	14,579
May	205,524	255,452	97.01	93.90	6,113	15,564
June	200,436	245,474	97.35	94.17	5,329	14,294
July	176,679	219,781	97.33	94.04	4,732	13,077
August	123,645	136,997	97.73	93.87	2,796	8,393

Reference - Canadian Car Demurrage Bureau
- Western Lines - Winnipeg, Manitoba
- Eastern Lines - Montreal Quebec

CHAPTER V

THE CUSTOMER VIEWPOINT

The previous chapters examined car supply and utilization and the importance of demurrage. This section of the study was performed to provide customer input; demurrage cannot be evaluated or analyzed by looking only at the results of car movements. To gain a complete understanding of demurrage one must study the reasons why cars are handled the way they are at the customers' dock or facility. A survey of shippers and receivers of forest products was undertaken and the results are presented in this chapter. The results, although thought to be statistically valid, have to be considered with great precaution. The questionnaire was mailed at a time of controversy with regard to changes in demurrage and respondents might have overreacted to the railway's proposal to reduce free time. The method chosen to evaluate what changes in demurrage rules might mean in terms of car utilization was to go to the individual shipper or receiver and ask how he would react to such changes. Other methods were available, such as trying to construct the demand curve for rail service, studying demurrage influence on rail car utilization in other countries, etc. Many arguments against any method can be easily found; any recommendations flowing from estimates of the demand curve for rail service are invalid in the absence of optimal outputs in all

the alternative services, if any.[9] What is applicable to railraods in other countries might not be to the Canadian railroads. Any method requires some subjective adjustments. The advantage of the chosen method was to provide much information on rail customers practices and a better understanding of their behaviour. Results of this survey combined with information on present car utilization will provide the necessary input to measure to what extent free time reduction would affect car utilization in the Forest Industry.

1 - METHODOLOGY

The questionnaire (reproduced in appendix III) was mailed to 100 shippers and 28 receivers of forest products. To obtain data from railroad customers at a local level, it was sent to the mill or the warehouse where a shipment originated or terminated. It was reasoned that those locally responsible for the handling, loading and unloading of rail cars would be most knowledgeable about the use of rail cars, particularly with regard to detention and demurrage. A letter was attached to the questionnaire to stress that neither the identity of the company nor the location would be revealed.

The sample of shippers of forest products surveyed was carefully selected in cooperation with the transportation department of the Council of Forest Industries of British Columbia. The selection was made so that the type of products shipped, size of the shippers and the railway carrier used would be represented in the sample in the same proportion as they are in the Mountain Region.

Time and financial constraints indicated that statistical

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[9] E. J. Misham, Interpretation of the Benefits of Private Transports, London School of Economics.

representativeness could not be obtained in the survey of receivers of forest products because of the great number of places where shipments terminate. Data from the questionnaire mailed to receivers may not be statistically representative. Further study would be required to assure statistical validity.

2 - RESULTS

86% of the shippers and 57% of the receivers contacted returned the questionnaire answered. The large number of answers and their completeness stem from the fact that demurrage is a recurring problem and that free time reduction is now the subject of a great deal of controversy.

Results from the shipper and receiver surveys will be presented separately and results from shippers will be presented first. Detailed results, going through each question of the survey are presented in appendix V. In this chapter results are grouped under the following headings: 1 - shipper sample distribution, 2 - economics of detention, 3 - causes of detention, 4 - shippers' attitude towards demurrage changes, 5 - incentives, 6 - shippers' perception of the car shortage, 7 - changes recommended by shippers to improve car utilization, 8 - significant differences between shippers' and receivers' point of view.

1 - Shipper sample distribution

The distribution of answers per type of product shipped is shown in table 20 and the distribution per carrier used in table 21. In the case of carrier used, the CNR is underrepresented; unfortunately many of the 14 unanswered questionnaires were from CNR customers. However the original size of the sample was very large; the question-

Table 20. Distribution of answers per type of forest product shipped

Woodpulp	9
Lumber	58
Plywood	14
Paper products	4
Miscellaneous	1
Total	86

Table 21. Distribution of car loaded (monthly) per carrier

C.N.R.	657
C.P. Rail	3676
B.C. Railways	1351
B.C. Hydro	438
Northern Alberta Railway	359
Burlington Northern	109
Miscellaneous	469
Average number of cars loaded by 86 companies in 1973	7059

naire was mailed to shippers representing more than half of forest products shipped every year. The low percentage of CNR customers who returned the questionnaire does not have any effect on most of the survey answers, except perhaps when comparing each railway's performance.

The diagram in figure 9 displays the frequency distribution of the demurrage payments found in this survey. It demonstrates that 65% of the shippers paid some demurrage in 1973 and that 37% were billed with less than 50 demurrage days (93% of those days were at $10 each).

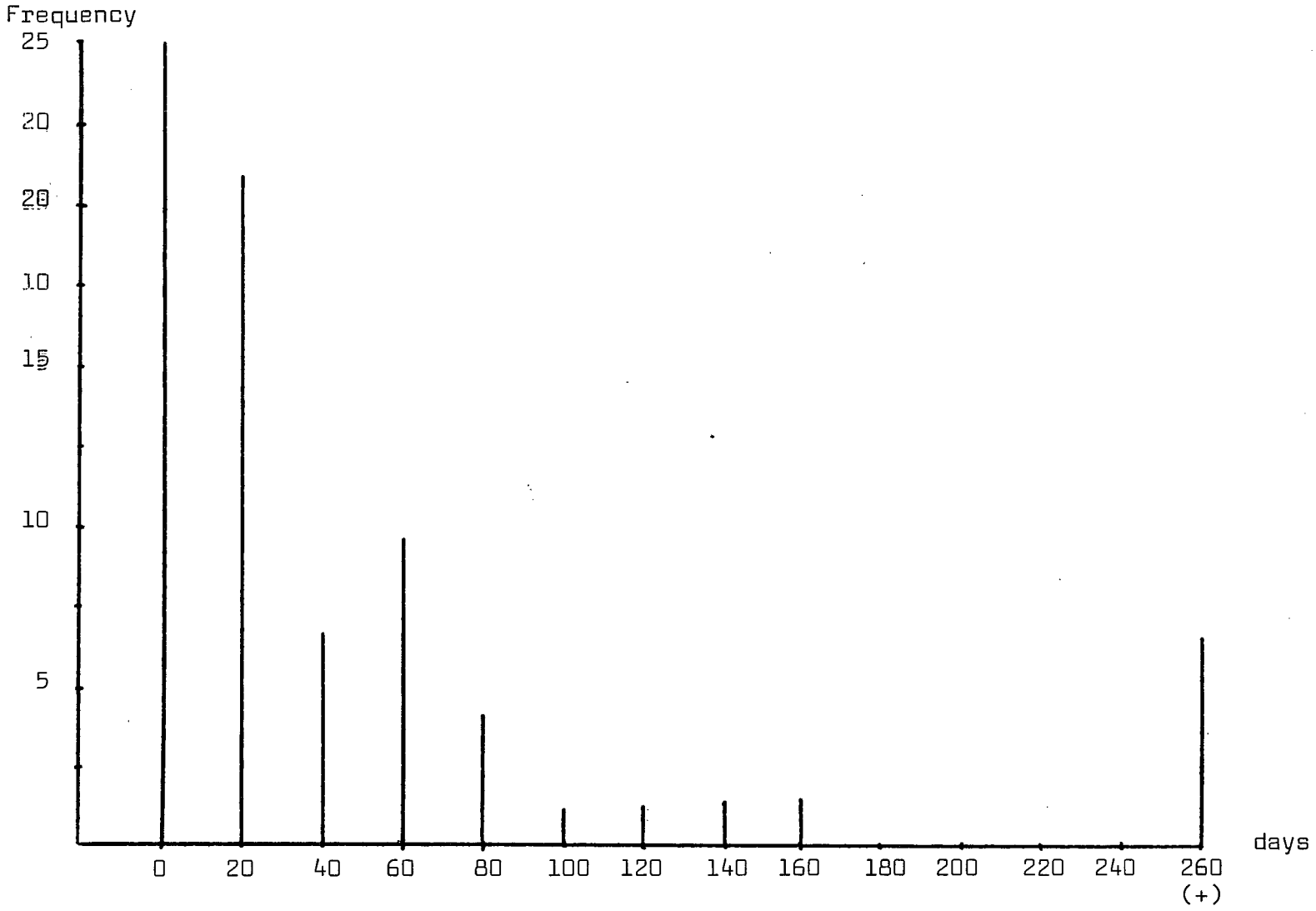
2 - Economics of detention

The factor having the greatest impact on the decision to hold the car beyond free time is the out-of-pocket cost sustained by the facility. Thus holding decisions are generally made on the comparison between demurrage cost for the detained cars and the cost to load. The majority of shippers surveyed indicated an unwillingness to work at overtime or premium rates to reduce detention. The reason for this is easy to understand. Most loading crews work on a scheduled basis, normally 40 hours in a 5 day week,and it is very expensive to call in workers for an overtime situation. The cost is avoided by detaining the car into the following day's work.

As expected, shippers with more rail volume and more frequent switch service tend to have overall less car detention. Larger shippers have better loading facilities; they receive a better service from the carrier. This gives management better guidelines for scheduling and assigning their work forces for production and loading. Therefore large shippers pay less demurrage relative to the number of cars they load.

Figure 9

Frequency distribution of demurrage days
paid by the 86 companies surveyed - 1973



3 - Causes of detention

The reasons for detaining cars over 24 hours are summarized in this section in order of response frequency.

a) Uncertainty of car supply (35%)

There are two factors of uncertainties: number of cars delivered and time of delivery. It is difficult to determine what percentage of cars ordered are delivered, especially since shippers tend to order more cars than needed hoping to reduce equipment shortage. Two of the companies surveyed had conducted studies to evaluate the reliability of car supply in 1973 (prior to the summer strike). They found that 93% of the 14,000 cars ordered were supplied. After the strike car shortages became worse and worse.

Railway customers were also asked to evaluate each railway's performance prior to the 1973 strike. The answers show that 51% of C. P. Rail customers received cars as expected (both in number and time of delivery) as compared with 42% for C.N.R. and 19% for B. C. Railways.

Poor performance from the carriers disrupts production and thus planning to load cars within 24 hours becomes extremely difficult.

b) Difficulty in scheduling of loading crews (13%)

This results directly from the uncertainty of car supply. About 70% of the shippers surveyed had full time loading crews that handled rail cars only. The rest had crews working either on loading or at the mill. In both cases uncertainty in number of cars delivered and time of delivery makes it very difficult to organize the labor force. Often this planning is done after the car has been delivered. As a result the car will stay empty for several hours after delivery.

c) Production problems (13%)

Industries try to eliminate rehandling and inventory as much as possible. As a result, slowdown or down time means that no material is available for loading of outbound cars and cars occasionally stay empty until production starts again.

d) Slow loading (13%)

Many box cars are still loaded by hand since the width of the door does not allow the use of mechanical loading equipment. Sometimes this equipment is not present anyway. Some mills find that the small volume they handle does not justify the purchase of sophisticated loading equipment.

e) Lack of daily switch service (11%)

In this case, free time reduction, to be effective, would have to be accompanied by better switch service, at least 5 days a week, Monday through Friday.

f) Miscellaneous (15%)

Causes of detention less often mentioned were the following: cars with mixed shipments cannot be loaded in less than 24 hours (meaning in fact one 8-hour shift day); switching is done during working hours and disturbs loading; bad weather; strikes, etc.

4 - Shipper attitudes toward demurrage changes

It is a human trait to be opposed to change, particularly if one is not aware of the true nature of the change and its effects. This trait tends to produce a bias. Similarly it is difficult to project what one would do in the case of any event that has not yet been experienced. Three possible changes were suggested in the questionnaire:

a) 24 hours free time, $10.00 per day for first four days and $20.00 per day thereafter,

b) 24 hours free time, $20.00 per day for first four days and $40.00 per day thereafter,

c) 24 hours free time, $30.00 per day for every day thereafter.

The answers are summarized in the following table.

Table 22. Shipper response on changed free time rates (no service change)

	Percentage of cars loaded		
	in less than 24 hrs.	between 24 hrs. and 48 hrs.	Over 48 hrs.
1973	67.13	27.75	5.12
(a)	68.23	29.15	2.62
(b)	68.88	28.56	2.62
(c)	69.27	28.13	2.6

An interesting conclusion which can be drawn from the responses is the small change that would take place under new rules. Shippers load their cars as quickly as possible and higher demurrage rates would make very little difference in most of the cases, except perhaps in diminishing the use of rail by shippers of forest products. Between 13% and 18% of the shippers surveyed said that they would make less use of rail if free time for loading was reduced to 24 hours.

5 - Incentives

Shippers were asked if they would accept an arrangement whereby they would agree to a maximum 24-hour free loading time. 48% would agree to 24-hour free time if the railways could guarantee the number of cars delivered and a delivery time before 7:00 A.M. 25% claimed that under no circumstance they would agree to 24-hour free time as

they argue it is impossible to load their cars during an 8-hour work day. 27% did not answer that question.

6 - Shippers' perception of the car shortage

Shippers were asked what they perceived as being the main reasons for the car shortage in Canada and their answers are listed below in order of importance.

a) railway inefficiency (poor turnaround - inefficient interchange and yard operations - poor coordination between railroads),

b) lack of railway equipment in service

c) cars damaged not being repaired

d) poor situation of U. S. railroads

e) higher demand of forest products than expected

f) insufficient incentive for privately leased cars

g) lumber cars being used for other commodities

f) railroad strikes

g) cars tied up at seaports.

7 - Changes recommended by shippers to improve car utilization

It was not possible to rank answers to this question according to well defined criteria, and some of the recommendations most often provided are listed below.

a) Reducing free time would not improve car utilization a great deal since mills already return their cars loaded as fast as possible. It would be more efficient for the railroads to reduce terminal delays at origin, destination and interchange points.

b) The 48 hour free time should be retained but the penalty for the first chargeable day should be greater than the overtime differential plus other costs which may be necessary to make up for inefficiencies which would require a third day.

c) Delays are often due to breakdown of rail equipment and railroad should improve maintenance.

e) Railroads should be penalized for delivering cars late in a similar manner as the shippers who return their cars after 48 hours.

8 - Significant differences between shippers and receivers point of view

Detailed results from the receivers survey are reproduced in appendix VI. In most cases the pattern of answers is similar to the one obtained in the shippers' survey. There is a very important difference however: receivers are more strongly opposed to a reduction of free time. The companies surveyed received between 4 and 5 cars a month (average) and do not have specialized crews working on unloading operations. Employees are working both on unloading cars and in the lumber yard serving customers and they cannot unload a car (especially a box car) within an 8 hour day shift. The companies surveyed feel they would make less use of rail in 47% of the cases, but recognize that reduction in use of rail is very difficult to achieve.

CHAPTER VI

SUMMARY AND CONCLUSIONS

There is a great concern with rail car utilization by railroads, the shipping public and government agencies. Recently greater emphasis has been placed on rail car utilization, and some progress has been accomplished. On July 11, 1973 the two major railroads proposed a reduction in free time to load cars, to improve car utilization. However they were not able to sustain this argument and they withdrew their proposal before the public hearing scheduled to take place before the Canadian Transport Commission started. After this unsuccessful attempt to reduce free time, both railways and customers agreed to review the whole demurrage problem. One objective of this study was to develop a methodology which could be used to approach the problem of demurrage and rail car utilization. After collecting information from railways' customers (through questionnaires and interviews) and from railroads regarding the load to load cycle of their cars (studying available car running records) this chapter will try to determine to what extent free time reduction would affect car utilization in the forest industry.

1 - MEASUREMENT OF IMPACTS OF DEMURRAGE CHANGES ON RAIL CAR UTILIZATION

Impact of demurrage changes can be measured in at least two ways. One is to assume that all car time savings can be turned into reduced fleet requirements and to project capital savings. This method requires a projection of the size of the fleet with and without changes in demurrage. Since no long term estimates of car requirements could be obtained from the railways, this method had to be abandoned. The other way of measuring the impact of free time reduction is to assume that some of the car time savings can be turned into new revenue loads. This second method was chosen in this study although it is difficult to know to what extent increased availability of equipment will result in better utilization.

Reduction of free time means some time savings in the load to load cycle and increases car availability. Since it is not possible to measure with certainty what the time savings might be if free time was reduced, the study tried to determine an upper and lower limit. Maximum time savings would be obtained if all customers released at least 95% of their cars within the free time allowance as they do now. This is the upper limit since it is very unlikely that only 5% of the cars would be charged with demurrage if free time was reduced to 24 hours. Minimum time savings would be obtained if changes in loading time were taking place as suggested by the customer response on changing free time in the questionnaire. This is the lower limit, the one upon which customers agree. Since it is a human trait to be opposed to change, this trait tends to produce a bias and it is reasonable to assume that the percentage of cars loaded in less than 24 hours would be greater than the percentage obtained from the questionnaire.

The only impacts measured in this study were with regard to benefits from reduction in load to load cycle. It should be remembered that although free time reduction might confer a benefit by improving car turnaround, there are costs associated with it both for the railroads (cost of increased switching service to take the maximum advantage of extra car availability) and for the Forest Industry (labour costs of extra loading crews, increased demurrage payments). However the objective of this study was only to determine to what extent free time reduction for loading and unloading rail cars would affect car utilization.

2 - RESULTS

Canadian terminated traffic is separated from the U. S. terminated one and for each type of traffic, minimum and maximum savings are calculated.

a) New cycle: lower limit

All the receivers of forest products surveyed indicated that they could not reduce their unloading time to 24 hours. Therefore the minimum reduction of the new cycle will be the same for both types of traffic since only shippers indicated a potential reduction in their loading time. However most likely receivers would reduce their unloading time, even to a small extent and the lower limit calculated will be too low.

The reduction in the cycle was calculated by determining for each company surveyed (shippers) the savings they would achieve. The results were weighted proportionally to the size of the shippers (in terms of car loaded per month) and extrapolated to all shippers. It was found that the average cycle for both types of traffic would be

reduced by 0.19 days.

b) New cycle: upper limit

(i) Canadian terminated traffic: shippers

The upper limit is obtained by assuming that 95% of the cars would be released within 24 hours (there are now 95% released within 48 hours, and 67% within 24 hours). Therefore it is assumed that 28% more cars would be released within 24 hours. Since there was no evidence that customers were trying to get their cars on Wednesdays after 7:00 A.M. (such a car does not pay demurrage until the following Monday 7:00 A.M.), it was assumed that the pattern of car delivery would stay the same. In any case shippers have very little control upon the day of delivery (and receivers even less).

Let x = time at origin for cars released within 24 hours

y = time at origina for cars released within 48 hours

z = time at origin for cars released after 48 hours

(1) $0.67x + 0.28y + 0.05z = 2.98$ days (actual origin time)

after improvement,

(2) $0.67x + 0.28x + 0.05z = A$ days (new origin time)

Subtracting (2) from (1), we find

$0.28(y-x) = 2.98 - A$

But $y - x = 1$ day (average)

Therefore $A = 2.98 - 0.28 = 2.7$ days

This assumes that the number of cars released after 48 hours would stay the same which is most likely untrue. The calculation is biased (the upper limit slightly too high).

(ii) Canadian terminated traffic: receiver

34% of the cars are now released within 24 hours, 61% within 48 hours and 5% after 48 hours.

Let x = time at destination for cars released within 24 hours

y = time at destination for cars released within 48 hours

z = time at destination for cars released after 48 hours

(1) 0.34x + 0.61y + 0.05z = 8.44 (actual destination time)

after improvement,

(2) 0.34x + 0.61x + 0.05z = B (new destination time)

Subtracting (2) from (1) we find:

0.61(y-x) = 8.44 - B

But y - x = 1 day (average)

Therefore B = 8.44 - 0.61 = 7.83 days

Again the calculation has a small bias as previously explained.

The cycle of a Canadian terminated car would be reduced by (2.98 - 2.7) + (8.44-7.83) = 0.28 + 0.61 = 0.89 days and the new cycle be 28.51 - 0.89 = 27.62 days.

(iii) U. S. terminated traffic: shipper

Same results as Canada terminated traffic.

(iv) U. S. terminated traffic: receiver

The savings are equal to zero since those receivers are outside Canadian jurisdiction.

The cycle of a U. S. terminated car would be reduced by 2.98 - 2.7 = 0.28 days and the new cycle be 43.21 - 0.28 = 42.93 days. The number of extra carloads that might have been made available between January and October 1973 if free time for loading and unloading had been reduced to 24 hours on January 1, 1973, is obtained by using the following formula:

# of extra carloads (10 months)

$$= (\text{\# carloads Jan-Oct 1973}) \times \left(\frac{\text{1973 cycle}}{\text{new cycle}} - 1 \right)$$

The above results are summarized in table 23.

Table 23. Potential savings from a reduction in free time (forest products traffic)

	1973 car cycle	Minimum potential savings		Maximum potential savings	
		New cycle	Extra carloads (Jan-Oct 73)	New cycle	Extra carloads (Jan-Oct 73)
Canadian traffic	28.51	28.32	1,227	27.62	5,892
Canada-U.S. traffic	43.21	43.02	1,211	42.93	1,789
Total			2,438		7,681

3 - CONCLUSIONS

The results from table 23 show that between 2500 and 7700 extra carloads of forest products might have been carried for the first 10 months of 1973 if there had been only 24 hour free time allowance. This possibility is based on two assumptions. First, reductions in the amount of time cars are held by rail customers would always lead to reduction in the total car cycle (however car availability is quite different from car utilization). Second, empty cars released would be used for the transportation of forest products (it is not known what percentage of cars allocated to forest products are also used for other commodities and to what extent; however this

might be compensated by cars allocated to other commodities and sometimes used for forest products.

The potential impact of free time reduction is very small, between 0.5% and 1.68% of extra carloads might have been carried, the main reason being that time spent under customer control is very small. The potential for improvements in carrier terminal time, interchange between carriers seems to be much greater than the benefits from reducing free time. In order to improve car utilization, C.N.R. and C. P. Rail need information in a form which does not seem to be available now either from Montreal head offices, or from the regional offices. Very simply, car running records could be kept for a long enough period and information regarding each component of a cycle (per type of car, per commodity carried, per region, etc.) could be obtained by means of a very simple computer program. The same information could be obtained from B. C. Railways. The process would be more time consuming since car running records are not available from a computer. However, if provided with car numbers (easily obtained from the customers), the office of the superintendant of traffic will gather the information from their records. Better knowledge from their operations should hopefully help the railroads in deciding on areas to be improved first.

Reduction of free time is a small part of a much larger problem: changes in demurrage rules and their effect on rail car utilization. A detailed study of this problem should review the current practices, observe their effects in terms of car utilization and compare these results with rail carrier and customer capabilities

and needs. Based upon a quantification of relevant facts, the objective of such a study would be to recommend appropriate demurrage rules and charges.

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APPENDIX I

APPENDIX I

The following is a letter sent to Mr. J. C. Gardiner, and Mr. A. F. Joplin, Vice-Presidents of Marketing and Sales for C.N.R. and C. P. Rail respectively, by the President of the Canadian Industrial Traffic League. This letter was reproduced in Traffic Notes Issue #4669, July 27, 1973.

"I refer you to your joint letter of July 11th last as it concerns the subject of the reduction in 'free time' for loading, which is scheduled to take effect on August 1st next.

We of the League are giving thought to the formation of a "joint industry - railway task force" to review the entire question of demurrage prior to December 31st, 1973. We shall be writing to you further as it concerns this subject, at a later date, so that a meeting can be arranged concerning same.

However, gentlemen we are fast approaching your proposed effective date of August 1, 1973 for the reduction of "free time" for loading from 48 to 24 hours. Although we understand that during the past 30 days you have been reviewing all submissions from industry concerning this matter, no meetings between yourselves and industry representatives to resolve outstanding differences of opinion, have been held, to our knowledge, with the exception of the Canadian Fertilizer Institute. This, to say the least is most disappointing.

We do feel that such a meeting is vital if the atmosphere of trust and cordiality, which has existed in the past between rail service suppliers and purchasers, is to continue in the future.

In this respect, the railways must answer, as a minimum rejoinder, industry's statements that the proposed reduction in "free time" for loading can not be justified on the grounds of need, nor on the grounds of effect. Please allow me to elaborate briefly on these two points.

The Canadian railways justify their proposed reduction in "free time" for loading by stating that i) there is a severe rail car shortage in Canada, and ii) that their proposed "free time" reduction will ameliorate the situation. Industry in Canada does not totally accept either premise. First, we feel that any apparent rail car shortage that may presently exist in Canada, is temporary in nature, and is the result in part of the railways failure to repatriate the vast number of Canadian cars which are presently being employed in the United States.

We believe that the Honourable Jean Marchand, Federal Minister of Transport, concurs, in part, with our evaluation of the situation. In responding, on June 8th, to a question in the House of Commons related to the apparent box car shortage in British Columbia, he replied that "discussions are being carried out not mainly with the government of British Columbia, but with the Americans. This is where our box cars are and the CNR and the CPR are trying to get back as many cars as they can". However, we of the League, differ with the opinion expressed in the second sentence of Mr. Marchand's statement. We believe that he would not and indeed could not have expressed such a view if he had been aware that on June 4th, at the request of the Canadian railways, the Association of American Railroads rescinded Car Relocation Directive No. 47. The purpose of Directive No. 47 was to encourage the prompt return of Canadian railcars used in the trans-border trade. This action by the Canadian railways suggests to us that either the rail car shortage in Canada has been eliminated, or that the Canadian railways are deliberately acting in an irresponsible manner, to the detriment of Canadian industry. This subject of Canadian rail cars in the U.S.A. was outlined to you both in my letter of June 8th last and has been completely ignored up to this time by you.

Secondly, the premise that the proposed "free time" reduction will ameliorate our present "severe rail car shortage" has been totally unsubstantiated in any way by the railways, except in that it is their "opinion" that it will do so. We feel that this opinion is totally unfounded, basing our belief, in part, on the results of a study made by Reebie Associates for the American Department of Transportation in July 1972, entitled "Toward An Effective Demurrage System". Having studied the movement of 1200 randomly selected cars, the report stated not only the "time specifications in the demurrage tariff...have a minimum influence on rail customer actions", but also that "the improvements in car availability which could result from reductions in carrier line haul and terminal time are probably three or four times greater than the benefits which potentially could be achieved through changes in demurrage".

In conclusion, it should be obvious to you that any implementation of your proposed "free time" reduction, prior to satisfactorily answering the aforementioned statement, would be viewed by industry as unjust, unilateral action on your part. Therefore, we feel that a further delay in the implementation of the proposed "free time" reduction is appropriate, in order that this subject can be fully discussed between yourselves and industry groups."

APPENDIX II

APPENDIX II

The following is a report of the progress of the Rail Demurrage Task Force printed in Traffic Notes, Issue A9685, November 13, 1973.

We (CITL) have just received a letter from the CN & CP confirming their desire for CITL to coordinate the formation of an Industry Steering Committee to consist of those industry associations who have shown an interest in the rail car demurrage question and related problems.

The Railways will also form a Railway Steering Committee.

The two steering committees will nominate members to a smaller joint Industry/Rail Task Force which will be Chaired by Harvey Levy of the Canadian Car Demurrage Bureau and who will have an industry representative as a Vice-Chairman.

The whole demurrage question will be reviewed, the ultimate goal being improved rail car utilization. The Task Force of 3 rail reps., 3 industry reps., plus The Chairman and Vice-Chairman will have the duty to come up with firm proposals as it concerns the whole question of demurrage (loading, unloading, etc.) after it has considered all problem areas related to it from the field.

As to timing, you will realize that it will take some time beyond December 31st next to accomplish this task, however, we are led to believe that the Canadian Railways do appreciate this and will not change present rules until the Task Force has submitted its final report.

APPENDIX III

APPENDIX III

The following questionnaire was sent to members of the Lumber and Building Materials Association of Ontario. A similar questionnaire was sent to members of the Council of Forest Industries of British Columbia. The two questionnaires are basically the same except for some changes in the wording to make them more appropriate to the nature of the receiver (either shipper or receiver of forest products).

Attached to the questionnaire was a covering letter which is included at the end of this appendix.

Q U E S T I O N N A I R E

REVISIONS TO CANADIAN CAR DEMURRAGE RULES

COMPANY: _____

LOCATION: _____

TYPE(S) OF FOREST PRODUCTS RECEIVED: _____

RESPONDENT: _____

PHONE: _____

1. How many rail cars were unloaded? (Monthly Average)

   in 1972: _____

   in 1973: _____

2. Is there a seasonal receiving pattern?

   Yes _____

   No _____

   If yes, how many cars were unloaded during the peak month?

	NUMBER	MONTH
in 1972:	_____	_____
in 1973:	_____	_____

3. Firm location is local to what carrier, and within switching limits of what other carrier (check off one and/or both columns, if applicable)?

CARRIER	LOCAL TO	WITHIN SWITCHING LIMITS
C.N.R.	_____	_____
C.P. RAIL	_____	_____
OTHER(S) (SPECIFY)	_____	_____

4. If you use only one railway, do you consider another railway as being a feasible alternative?

   Yes _____

   No _____

5(a) How often is your operation supposed to receive a switch?

a) Daily - 7 days a week _____

b) Daily - Monday through Saturday _____

c) Daily - Monday through Friday _____

d) Every two days _____

e) Other (specify): _____

5(b) How often does your operation receive a switch (based on past experience - not what the carrier is expected to perform)?

		% of Times
a) Daily - 7 days a week	_____	_____
b) Daily - Monday through Saturday	_____	_____
c) Daily - Monday through Friday	_____	_____
d) Every two days	_____	_____
e) Other (specify):	_____	

6. At what time does the switch usually occur?

a) 7 a.m. to 11 a.m. _____

b) 11 a.m. to 5 p.m. _____

c) 5 p.m. to 7 a.m. _____

d) Switch is on call _____ When? _____

7. Who usually unloads your car?

a) Crew working only on unloading operations _____

b) Crew working either on unloading or in lumber yard _____

8. What percentage of cars are unloaded and ready to be released?

a) in less than 24 hours _____%

b) between 24 and 48 hours _____%

c) in more than 48 hours _____%

Total 100 %

9(a) What are the main reasons to keep cars more than 24 hours?

a) Switching not available daily _____

b) Long unloading process because of existing unloading facilities _____

c) Uncertainty of car supply _____

d) Difficulty in the scheduling of unloading crews _____

e) Others (specify): _____

_____

_____

_____

_____

9(b) Describe unloading facilities and type of unloading at lumber yard:

_____

_____

_____

_____

_____

_____

_____

10. How many demurrage days was your operation billed for?

in 1972 _____

in 1973 _____

11. What percentage of those days were at $10.00 each?

in 1972 _____

in 1973 _____

12. Is demurrage a budgeted item?

Yes _____

No _____

13(a) During the period prior to the 1973 national carrier strike, what percentage of cars ordered were delivered on time?

C.N.R. _____%

C.P. Rail _____%

Other _____%

13(b) Have you ever conducted a survey to evaluate the reliability of car supply?

Yes _____

No _____

If yes, what were your findings?

_____

_____

_____

_____

_____

_____

_____

13(b) Continued -

14. If the present free time rule and existing demurrage rates (basically, 48 hours free time, then $10.00 per day for the first four days and $20.00 per day thereafter) were changed to one of the following:

a) 24 hours free time, $10.00 per day for first 4 days and $20.00 per day thereafter

b) 24 hours free time, $20.00 per day for first 4 days and $40.00 per day thereafter

c) 24 hours free time, $30.00 per day for every day after

i) What unloading time would you expect to achieve under one of the above new rules?

	% UNLOADED IN LESS THAN 24 HOURS	% UNLOADED BETWEEN 24 AND 48 HOURS	% UNLOADED IN MORE THAN 68 HOURS	TOTAL
a)				100%
b)				100%
c)				100%

ii) Would the change in rules affect the amount of rail traffic delivered to your firm?

	LESS USE OF RAIL	SAME
a)		
b)		
c)		

15. What would you consider to be an acceptable operating arrangement, whereby you could agree to a maximum 24-hour free unloading time?

16. What do you consider to be the main reasons for the present car shortage?

1) _____

2) _____

3) _____

17. What changes do you recommend to the present demurrage tariff, that you feel will result in improved rail equipment utilization?

January 16, 1974

Dear Mr.

As you know the C.N.R. and C.P. Rail, in conjunction with a Canada-wide industry task force, have formed a Committee to evaluate the present demurrage tariff, and to recommend changes to this tariff that will result in improved car utilization.

In preparation for this rather intensive review of the demurrage tariff, the Council of Forest Industries in Vancouver, and myself have prepared a questionnaire. This will provide the guidelines and answers that are needed to identify areas for change, what can or cannot be done, and the potential benefits and costs that can occur with certain changes. The survey will be a part of my graduate thesis.

To determine the full impact of changes in demurrage on rail car utilization, it is absolutely necessary to analyze the situation of receivers of forest products. On the recommendation of the Council of Forest Industries, I contacted the Lumber and Building Material Association of Ontario and Mr. Tucker, its Supervisor of Administration and Member Services, provided me with a list of thirty members representating a fair cross section of the Association.

I earnestly solicit your assistance, for without it I cannot complete the study. This study should provide a good basis for shippers and receivers of forest products to discuss changes in demurrage with the railways.

I would be very grateful if you could complete the attached questionnaire and return it to me no later than February 22, 1974.

The information that I receive will be kept in the strictest of confidence, and will be combined with that received from all other respondents, so that the individual company information will not be divulged.

I would like to thank you very much for your time and trouble to answer this questionnaire. I hope to hear from you soon.

Yours very truly,

J. P. Gabille
Graduate Student
Transportation Division
Faculty of Commerce and
Business Administration

APPENDIX IV

APPENDIX IV

BRITISH COLUMBIA FORECAST SHIPMENT OF FOREST PRODUCTS

ESTIMATED PLYWOOD SHIPMENTS TO POINTS IN CANADA 1974 (Million Square Feet, 3/8" Basis)

Destination	Volume
British Columbia	475
Alberta	230
Saskatchewan	105
Manitoba	105
Ontario	620
Quebec	415
Maritimes	125
TOTAL CANADA	2,075

Source: Transportation Department, COFI, October, 1973.

ESTIMATED WOOD PULP SHIPMENTS TO CANADA AND THE UNITED STATES 1974 (Thousand Air Dry Tons)

Destination	Volume	
	Rail	Cargo
Canada	120	-
United States		
Northeast	240	80
North Central	410	-
South Atlantic	95	-
South	65	-
West	240	170
Total United States	1,050	250
Total Canada and United States	1,170	250

Source: Transportation Department, Council of Forest Industries of B.C. October, 1973.

ESTIMATED NEWSPRINT SHIPMENTS TO CANADA AND THE UNITED STATES 1974

Destination	Volume
Canada	135
United States	
Northeast	10
North Central	10
South Atlantic	5
South	10
West	1,280*
Total United States	1,315
Total Canada and United States	1,450

* Approximately 800,000 Tons by Water.
All other volumes by rail.

Source: Transportation Department, Council of Forest Industries of B.C. October, 1973.

ESTIMATED SHIPMENTS OF LUMBER TO CANADA AND UNITED STATES 1974 (Million Board Feet)

Canada	
B.C., Yukon, Northwest Territories	93
Prairies	390
Ontario	325
Quebec	102
Maritimes	20
Total Canada	930*

United States	Rail	Cargo	Total
Northeast	530	1,080	1,610
North Central	2,740	-	2,740
South Atlantic	380	840	1,220
South	670	-	670
West	480	80	560
Total United States	4,800	2,000	6,800
Total Canada and United States	5,730	2,000	7,730

* Rail (Balance of One Billion FBM by Truck)

Source: Transportation Department, COFI, October, 1973.

APPENDIX V

APPENDIX

RESULTS FROM THE SHIPPERS SURVEY (*86 REPLIES)

1. Total number of cars loaded (monthly average)

1972	-	7373
1973	-	7059

2. Seasonal shipping pattern

Yes	-	21
No	-	61
No Answer	-	4
Total		86

3. Total number of cars loaded (monthly average) per carrier in 1973

C.N.R.	657
C.P.Rail	3676
B.C. Railways	1351
B.C. Hydro	438
Northern Alberta Railway	359
Burlington Northern	109
Miscellaneous	469
Total	7059

4. Existence of an alternative to carrier(s) presently used

Yes	-	30
No	-	52
No Answer	-	4
Total		86

5.a) Switch service (as it is supposed to be)

	No. of answers
a. daily - 7 days a week	8
b. daily - Monday through Saturday	15
c. daily - Monday through Friday	35
d. every two days	5
e. other	22
No answer	1
Total	86

5. b) Percentage of time where a switch is performed as it is supposed to be.

	No. of answers
50 - 60%	1
60 - 70%	1
70 - 80%	1
80 - 90%	2
90 - 100%	62
No answer	33
Total	86

6. Time at which a switch usually occurs

	No. of answers
7 a.m. - 11 a.m.	12
11 a.m. - 5 p.m.	30
5 p.m. - 7 a.m.	31
Switch on call	10
No answer	3
Total	86

7. Loading of cars

	No. of answers
a. Crew working only on loading operations	60
b. Crew working either on loading or in mill	19
c. Other	7
Total	86

8. Loading time
Average percentage of cars loaded and ready to be released -

a. in less than 24 hours	67.3%
b. between 24 and 48 hours	27.75%
c. in more than 48 hours	4.12%
	100 %

9. Main reasons to keep cars more than 24 hours

	No. of times mentioned
a. switching not available daily	15
b. long loading process because of existing facilities	10
c. uncertainty of car supply	52
d. difficulty in the scheduling of loading crews	17
e. 1) switching done during loading	2
2) impossible to load car with mix shipment in 8 hours	8
3) breakdown of machinery	18
4) weather	3

10-11. Total demurrage days

	Total	At $10
1973	2635	$2,440

12. Demurrage as a budgeted item

Yes	10
No	70
No answer	6
Total	86

13. Carriers performance

	20-30%	30-40%	40-50%	50-60%	60-70%	70-80%	80-90%	90-100%	Total
C.N.R.				10.52	15.79	15.79	15.79	42.11	100%
C.P.Rail				9.76	9.76	17.07	17.07	51.22	100%
B.C.Railways	9.09	9.09	18.18	9.09	9.09	18.18	9.09	18.18	100%
B.C.Hydro					12.5	25	25	37.5	100%

Key:

ex. 1: 10.52% of CNR customers received cars as ordered between 50 and 60% of the time in 1973

ex. 2: 42.11% of CNR customers received cars as ordered between 90 and 100% of the time in 1973.

14. Shipper attitudes towards demurrage changes.

(i) 3 proposals

a) 24 hours free time, $10.00 per day for first four days and $20.00 per day thereafter

b) 24 hours free time, $20.00 per day for first four days and $40.00 per day thereafter

c) 24 hours free time, $30.00 per day for every day after

	Percentage of cars loaded		
	in less than 24 hours	between 24 and 48 hours	in more than 48 hours
if a)	68.23%	29.15%	2.62%
if b)	68.88%	28.56%	2.62%
if c)	69.27%	28.13%	2.60%

(ii) changes in use of rail

	Less use of rail	same
if a)	12.98%	76.62%
if b)	18.7%	70.67%
if c)	18.7 %	70.67%

15. Acceptable operating arrangement where a shipper would agree to a maximum 24 hour free loading time

	No. of times mentioned
Nothing acceptable	17
Guarantee service	32
Daily switching	9
Before 7 a.m. switch	5
Spot cars as requested	4
Keep week as free time	1

16. Main reasons for the car shortage

	No. of times mentioned
Railways inefficiency	44
Lack of equipment	29
Cars not being repaired	17
Poor situation of railroads in U.S.	14
Higher than expected demand for lumber	14
Insufficient incentives for privately leased cars	6
Lumber cars being used for other commodities	4
Strikes	2
C.N.R. not clearing cars to N.A.R. in Edmonton	2
Cars held in transit	1
Cars tied up at seaports	1
C.P.Rail cars waiting in Calgary to be weighted over a week	2

APPENDIX VI

APPENDIX VI

RESULTS FROM THE RECEIVERS SURVEY (15 REPLIES)

1. Total number of cars unloaded (monthly average)

1972	-	58
1973	-	70

2. Seasonal receiving pattern

Yes	5
No	9
No answer	1
Total	15

3. Total number of cars unloaded (monthly average) per carrier in 1973

C.N.R.	54
C.P. Rail	15
Miscellaneous	1
Total	70

4. Existence of an alternative to carrier(s) presently used

Yes	9
No	5
No answer	1
Total	15

5.a) Switch service (as it is supposed to be)

	No. of answers
a. daily - 7 days a week	0
b. daily - Monday through Saturday	1
c. daily - Monday through Friday	8
d. every two days	0
e. other	2
No answer	4
Total	15

b) Percentage of time where a switch is performed as it is supposed to be

70 - 80%	1
80 - 90%	1
90 - 100%	9
No answer	4
Total	15

6. Time at which a switch usually occurs

7 a.m. - 11 a.m.	5
11 a.m. - 5 p.m.	5
5 p.m. - 7 a.m.	0
Unpredictable	2
No answer	3
Total	15

7. Unloading of cars

	No. of answers
a) crew working only on unloading operations	0
b) crew working either on unloading or in lumber yard	11
c) others (contracted unloading)	4
Total	15

8. Unloading time

Average percentage of cars unloaded

a) in less than 24 hours	33.64%
b) between 24 and 48 hours	53.77%
c) in more than 48 hours	12.59%
	100 %

9. Main reasons to keep cars more than 24 hours

	No. of times mentioned
a) switching not available daily	1
b) long unloading process because of existing facilities	5
c) uncertainty of car supply	3
d) difficulty in organizing unloading by crews	4
e) (1) impossible to unload car with mix shipment in 8 hours	2
(2) cars loaded very poorly	2
(3) weather	3

10-11. Total demurrage days

	Total	at $10
1972	119	109
1973	129	112

12. Demurrage as a budgeted item

Yes	2
No	8
No answer	5
Total	15

13. Carrier performance

	50-60%	60-70%	60-80%	80-90%	90-100%	Total
C.N.R.	20	10	40	20	10	100
C.P.Rail	28.57		57.14	14.29		100

Key:

ex. 1: 28.57% of C.P.Rail customers received cars as ordered between 50 and 60% of the time in 1973

ex. 2: 57.14% of C.P.Rail customers received cars as ordered between 60 and 80% of the time in 1973

14. Receiver attitudes towards demurrage changes

(i) This question was very poorly answered and it was not possible to reach any meaningfull conclusion

(ii) In all cases 47% of the receivers would make less use of rail if demurrage rules were changed as proposed in question 14(i). 53% would use rail as much as they do now.

15. Acceptable operating arrangement where a receiver would agree to a maximum 24 hour free unloading time

	No. of times mentioned
Nothing acceptable	9
Cars more suitable to transport of forest products	4

16. Main reasons for car shortage

	No. of times mentioned
Railway inefficiency	6
Lack of equipment	4
Higher than expected demand for lumber	3
Long unloading process	3
Slow custom clearance	1