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COST FINDING ON A SMALL RAILROAD

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"COST FINDING ON A SMALL RAILROAD"

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GENERAL CONSIDERATIONS

A small railroad such as the AC&Y offers an unusual opportunity to the cost analyst seeking to determine the cost of railroad service since its operations are comparatively simple, its length is comparable to a division of a larger railroad, it has only one yard and it performs only carload freight service. In short, the various operations performed are measurable in size, can be subject to detailed and continuous scrutiny and involve no complicating factors such as allocation of costs between freight and passenger service, absorption of less than carload deficits and the like.

The AC&Y is a small Class I carrier operating between Akron and Delphos, Ohio, a distance of some 165 miles. It contains only two major traffic generating or receiving points, namely Akron, the center of the rubber industry, and Carey, some 110 miles west of Akron where large-scale quarrying operations generate a substantial traffic in fluxing stone and road stone. Traffic originated or received at other points on the railroad is normally less than 5% of the total traffic originated or received, although the city of Medina, some 20 miles west of Akron, is becoming of increasing importance with the recent location there of a number of industrial facilities.

During a typical year the AC&Y handles between 75,000 and 85,000 carloads of traffic. Of this total approximately 50,000 cars normally originate or terminate on the AC&Y and the balance, usually in the neighborhood of 30,000 cars, represents overhead traffic delivered to the AC&Y by other carriers and, in turn, delivered by the AC&Y to a connecting carrier. The flow of traffic has considerable inbalance, with the bulk of the tonnage moving eastbound and with trains running westbound comparatively lightly loaded. On a daily standpoint, traffic handled ranges from a low of approximately 100 cars on Sundays and holidays to a peak of somewhat over 300 cars during periods of traffic concentration. The more normal traffic pattern ranges from 160 to 250 cars per day, with an average loading of slightly in excess of 200 loaded cars per day. Since the traffic does fluctuate substantially from day to day and usually without advance warning, our pattern of operations has to be designed to handle the maximum traffic which may be tendered on any given day. This can normally be accomplished, however, simply by adding additional diesel units to our existing trains, and only in exceptionally rare instances is it necessary to alter our traffic pattern of two through trains a day each way, combined with local trains, to perform pick-up and delivery service at way points along the way. This comparatively elaborate description of our road and its operating characteristics is necessary for an understanding of the cost study which I have made of our operations and which I propose to outline for you.

It appeared that a most intelligent approach to a cost study on a railroad such as ours was to isolate the types of functions performed, measure the number of units involved in each function, allocate the labor time and equipment expense devoted to each, and arrive at unit costs by function which could then be matched up with any of a variety of transportation services being performed. In the final analysis, it was determined that the number of separate functions performed on the AC&Y is comparatively limited. These are the following:

1. Maintenance of a car pool for the use of our shippers. This concept, of course, included the car pool resulting from loads received as well as the car pool necessary to support potential loadings on the line.

2. Making up and breaking up trains in our yard with delivery of cars to connections including the Akron & Barberton Belt Line, a switching line which services much of Akron and Barberton.

3. Performing switching service for shippers located on the AC&Y itself, including the delivery of loads, the pulling and spotting of empties and the preparation of cars for loads.

4. The hauling of cars in transportation service along the line of our railroad. This concept includes the hauling of both loaded and empty cars, since both are handled.

5. The performance of switching service out along the railroad for our shippers and for the handling of cars to and from our connections. Because of the unusual nature of our operations, it was possible to determine with considerable accuracy the relative costs of switching service out along the line and of making inter-carrier connections.

6. Performing the various overhead functions involved in any railroad operation, such as accounting, administration and traffic solicitation.

Throughout the study the concept was used that costs should be developed on a per car basis and that these costs, in turn, could properly be divided into costs associated with terminal or non-movement costs and costs associated with the actual movement of cars in through transportation service over the railroad. On our railroad it is believed that the use of the car as a unit is an appropriate one, rather than the use of any tonnage figure. Our experience has been that the cars loaded most heavily are also the cars which generate the most empty return mileage, and that on an overall basis costs of gondola or hopper car traffic do not vary significantly from costs of box car traffic on a car for car basis. Accordingly, the car was considered the unit and all costs were developed either as so many dollars stationary or terminal car costs for operations at a fixed point, or running costs in cents per car mile where genuine transportation movements over the line were involved.

One variation between our cost studies on the AC&Y and many other cost studies is our concept that local or way trains out on the line are actually performing only switching or interchange operations, and all costs associated with these trains are allocated to interchange or switching expense rather than to road running costs. Likewise, a small portion of the expense of through trains was so allocated when, as in the case of fuel, it was apparent that part of the expense involved was actually incurred in interchange operations rather than in the movement of cars over the railroad.

The treatment of freight car costs in the AC&Y study is probably different from that involved in most railroad costing procedures. Our road is a comparatively short one and cars normally move over it in from 8 to 10 hours in through transportation service. Therefore, except in the case of overhead traffic where there may be delays at the two interchanges and approximately one day's per diem time is accordingly assigned as a legitimate car time expense, other car time expense on the AC&Y is considered as car terminal or car pooling expense associated with the maintenance of a backlog of equipment for the use of our shippers. As will be apparent from the detailed cost material included in the study, the average car expense on a time basis for our own traffic, namely traffic which we originate or receive, is approximately $20 per car. This includes time in the shippers' hands, as well as idle pool time. These expenses, incidentally, are computed not by elaborate analysis of the cost of freight train car repairs, investments, depreciation and similar items, but by a straight application of the per diem rates to the number of car days involved. The rationale for this decision arises out of the fact that we normally use about 75% foreign cars on our railroad, while our own substantial car fleet is scattered over the country on other railroads. Accordingly, we cost out our freight car operations separately as though we were in the business of renting out cars to others and, in turn, renting cars from others, as in fact we are. For purposes of the cost of railroad operations on the AC&Y we compute our freight car costs on the $2.88 per diem basis.

The final major observation which needs to be made concerning the AC&Y cost study is that we conceive a cost study in break-even terms. In other words, if during any given time period we have sufficient freight revenues to cover our operating expenses including depreciation (except expenses associated with freight cars) plus property, excise and payroll taxes and gross per diem costs, we consider that we have broken even. We do not consider any return on investment in roadway or any return on investment in our diesel locomotives, since all of these investments represent sunk capital which could not be put to any other use. Since we do not consider profits as a cost, we do not consider income taxes on profits as a cost either. As previously noted, our freight car fleet is handled separately and our cost calculations there do include a return on investment.

Finally, it should be noted that any series of cost figures arrived at are applicable against the whole flow of traffic handled during the time period concerned. While the cost for handling any single car is, of course, relatively inconsequential, we feel that costs over any time period, even as short as a month, must reflect a pattern of operations which, once established, is simply not subject to any significant changes day by day.

PREPARATION OF THE COST STUDY

In arriving at the cost figures an elaborate analysis was made of our traffic for the first six months of 1960, taking into account the movement of both loaded and empty cars. A similar analysis was made of the operations conducted in our Akron yard, again considering activity with respect to both loaded and empty cars. Finally, in road operations a careful attempt was made to distinguish between the movement of traffic over the road and car handling operations out along the road which are in the nature of switching operations. The general methodology employed is set forth in Exhibit A, "Formula for Determining Yard and Terminal Costs", and Exhibit B, "Formula for Determining Road Switching Costs". These represent a basic part of the cost study.

While the formulae for allocating and assigning costs in the yard and terminal on the one hand, and out on the road on the other are reasonably self-explanatory, a few additional comments are perhaps necessary.

The number of locomotives considered as employed in yard service represent the actual number which we use in yard service, and not the artificial classification which we make to the Commission. Our road and yard power is for the most part interchangeable.

In the case of the road formula, it should be explained that our through trains also perform switching service, but only a minor portion of the expense of these trains is charged against road switching. The reason for this is that mileage rather than actual hours worked is normally the determining factor in the pay of our road crews on our through trains and, except for the additional fuel and locomotive time involved, the incidental switching services which they perform cost the company nothing. Most of our switching out on the road, however, is performed by our local and way trains not only at our various shippers and consignees, but also with respect to lining up interchange traffic. Our through trains do switch cars to interchange tracks with connecting carriers and pick up cars from connecting carriers in those cases where the locals have not already assembled the traffic.

The final work in connection with the cost study was to take our various operating costs, property taxes, payroll taxes and excise taxes and distribute them between terminal and station costs, road running costs and road switching and car handling costs. The terminal costs were then subdistributed between assembly and distribution costs, and switching costs. Finally, car time costs and overhead costs such as executive, accounting and traffic expenses were distributed over all traffic on a per car basis. The results of all of these computations are set forth in the exhibit entitled "Allocation of AC&Y Break-Even Costs for the First Six Months of 1960" which sets forth on two pages the entire distribution of all of our costs among the respective functions which we perform.

By dividing the road running costs (column 3) by the number of freight car miles (column 5), it was possible to determine running costs on a unit basis. In similar fashion, by dividing switching and car handling costs (column 4) by the number of car handlings on the road (column 6), it was possible to determine on a unit basis our interchange or switching costs west of Akron. Columns 7 to 12 represent similar computations of unit costs for the remainder of the transportation functions which we perform.

From all of the elaborate background work involved, some very simple cost factors can be developed as a means of gauging what it actually costs us to handle varying types of traffic. For example, running costs per car mile, whether the cars be loaded or empty, are approximately 1.5¢. This means that for a 165-mile haul from Delphos to Akron running costs are about $25. If the nature of the traffic is such that the car returns empty (as in covered hopper traffic, for example) running costs for any particular carload moving this distance would thus be, not $25, but $50. To these running costs for any particular carload of freight must be added necessary interchange costs, both out on the Northern and at Akron, appropriate switching costs where applicable, per diem or mileage costs, and overhead costs resulting from management, accounting and treasury operations, and traffic solicitation. The figures in the table are reasonably self-explanatory, but a few words of comment on each one may be appropriate.

In the case of interchange costs, our experience out on the Northern indicates that each interchange of a loaded or empty car involves a cost of $3.70. Where a car is either loaded or unloaded on the Northern, two separate car handlings are involved and the cost of this operation is, accordingly, $7.40. At Akron our interchange expense per car, either loaded or empty, appears to be $4.80. Thus, the minimum transportation expense on an overhead car moving from Delphos to Akron with no return empty mileage would be $3.70 for the interchange at Delphos, $25 to move from Delphos to Akron, and $4.80 for the interchange at Akron, or a total of $33.50. To this cost should be added a minimum per diem expense of $3.00 for non-mileage cars and $13.50 for executive, accounting, and traffic expense.

In short, the break-even cost on an eastbound overhead car moving all the way across the line and with no return empty haul is approximately $50. If the major portion of traffic expense were assigned only to overhead cars and not against all traffic as I have assigned it in this study, the break-even cost would be from $5 to $10 per car higher.

In the case of overhead traffic in tank or refrigerator cars moving on a mileage basis with empty return haul, additional car hire expense of from $9 to $12 would be sustained, plus additional interchange expense of $8.50, and additional running expense of $25. On such traffic the break-even figure would appear to be in the neighborhood of $95 per car.

It will be noted that the tables make a distinction between interchange costs in the Akron yard and switching costs involved in the switching of our shippers. Based on an allocation of the time of all our yard crews, it appears that the cost per loaded car of serving AC&Y based shippers is about $16.50. This is somewhat higher than the net figure of switching expense involved when we reach the shippers through the Belt Line or by a switch to and from other Akron carriers. In these cases our gross switching charges

are reduced substantially by the switching absorption agreements with other railroads, and on a net basis our switching charges per loaded car range between $12 and $16, with an average of close to $14.

In summary, our switching expense for serving Akron shippers can be anywhere from $12 to $16.50 per loaded car, to which must be added an interchange cost of $4.80 for the loaded car and another $4.80 for the empty, in the event that the car goes back over the road empty. Thus, yard costs per loaded car at Akron would seem to fluctuate between the minimum figure of $16.80 and the maximum figure of $26.10, with an average of about $21 or $22.

For all Akron traffic an additional charge of $2.65 per loaded car must be assigned to cover the expense of our East Akron office force. Likewise, for all Akron traffic and also for all traffic loaded or unloaded on the Northern, a per diem expense of $20 per loaded car must be assigned on the basis of our actual per diem experience during the first six months of 1960. The only exception is where the cars involved are mileage cars and rental costs are determined by the miles run, both loaded and empty. Finally, for every loaded car handled on the system there must be allocated $2.30 to cover executive and industrial expense, $3.30 for accounting and treasury expense, and $7.90 for traffic expense. The final item might well be broken up between overhead and non-overhead traffic, but for purposes of this study I have assigned it on a per car basis covering all traffic.

In recapitulation, the following factors should be used in computing the break-even costs for handling any significant portion of our traffic during the first six months of 1960:

1. Akron terminal and station expense - range, $20-$30; average, $25. (The lower figure will usually apply on box car traffic, and the higher figure on hopper, covered hopper, and tank car traffic.)

2. Car rental costs for all cars loaded or unloaded at Akron or out on the line - average, $20.

3. Car rental costs for mileage cars vary by the distance run. Usual average - $12-$15.

4. General overhead costs, including traffic expense applicable to all cars - $13.50.

5. Switching expense for cars loaded or unloaded on the Northern - $7.40.

6. Akron interchange costs on overhead traffic, loaded or empty car - $4.80.

7. Northern interchange expense for loaded or empty car - $3.70.

8. Car rental costs on overhead traffic - $3.00.

9. Car rental costs on overhead mileage cars - $12-$15.

10. Running costs per car mile, loaded and empty - 15¢ per mile. (On a system average this figures out at $24 per loaded car.)

Applying these various factors to typical segments of our traffic produces the following minimum costs:

1. Box car traffic between Akron and Spencer or New London, or vice versa - $60-$65.

2. Box car traffic between Akron and Columbus Grove or Delphos, or vice versa - $80-$85.

3. Hopper traffic Carey to Akron destination - $103.

4. Hopper traffic Carey through Akron - $82.50.

5. Coal overhead traffic Carey to Spencer - $35.90. (Assumes that empties do not return over AC&Y.)

6. Covered hopper traffic Barberton to Delphos - $120.40.

7. Box car overhead traffic Delphos to Akron - $50.

8. Tank car overhead traffic Delphos to Akron - $95.

CONCLUSIONS

Inspection of the cost figures on the two-page allocation breakdown indicates some rather interesting conclusions with respect to the nature of railroad costs. Our running costs per car mile either loaded or empty total approximately 15¢, of which 6¢ represents maintenance of way expense, 2¢ represents maintenance of equipment expense and the other 7¢, actual transportation expense. If one were to assume average loads of 30 tons per car, which is not too far from the truth after taking into account empty car mileage, our average cost of moving traffic over the road is about five mills per ton mile. The AC&Y, it should be remembered, is a road of light traffic density and enjoys a relatively short haul of approximately 100 miles per average car. Railroads with heavier traffic density should be able to spread their maintenance of way expense over more units and lower their cost to possibly three or four mills per ton mile. This saving, however, is not sensational and suggests that from the standpoint of transportation movement cost, at least, the benefits of railroad mergers and the consolidation of traffic over fewer miles of track may well have been overstated.

A second observation, which is not new but which is certainly reinforced by our experience, is that the basic railroad problem from a cost standpoint is the terminal situation. Our experience tends to show that even with our relatively simple terminal operations we encounter switching and assembly expenses in the neighborhood of $25 per car for every car that is loaded and likewise for every car that is unloaded. Assuming comparable expenses at the other terminal on whatever railroad originates or terminates the shipment, expenses of approximately $50 are occasioned in both the loading and the unloading operation. Expenses of this magnitude very quickly indicate why rail transportation is not necessarily the low-cost form of transport for comparatively short hauls.

A third observation has to do with the extraordinarily poor utilization of freight car equipment. As noted throughout the study, except for overhead traffic moving across our railroad on part of the journey including connecting railroads at both ends, it requires an average of approximately seven car days for each load originated or terminated on our line. This average cost of $20 per load is nearly as high as our total average running cost per load on the traffic which we handle. I assume that railroads with a longer length of haul have a somewhat better record than we, but judging by country turnaround averages I doubt that the record is significantly better. In short, rail transportation as now conducted appears to me to involve an exceptionally wasteful use of the hauling unit - freight car - and with rising freight car costs and rising per diem rates efforts to improve the efficiency of car use are certainly called for.

A final observation which might be made is that our property has comparatively high costs in terms of administration, accounting and traffic solicitation expenses when measured against the standard of gross revenues received. When such costs are measured on a per car basis, our costs of

approximately $13.50 per car appear to be about one-third higher than the national average which, in 1959, was at a rate of approximately $10 per car handled. Costs of this type, of course, are subject to a significant reduction from the standpoint of their impact upon the tonnage carried when rail properties are merged, when the length of the average haul is increased or when the average load per car is increased.

In final summary, if our experience on the AC&Y is any indication, railroad costs can be determined with a fair degree of precision during a given time segment. We believe that administrative and traffic expense should be allocated on a per car basis, that terminal expense should receive a similar allocation and that the same application should be made for interchange switching between carriers. We believe that the car mile is the proper measure of expense only for movements over the railroad, but that the cost of these movements should include not only transportation expense but the cost of maintaining the track and maintaining the power to pull the cars. Finally, we believe that freight car expense is essentially a time expense and should be charged for on a per car basis rather than on a car mile basis. If this approach to expense costing is a reasonable one, and we think it is, we then believe that it offers the basis for radical departures in the pricing of our service with a view to restoring lost traffic to the railroads.

ALLOCATION OF AC&Y BREAK-EVEN COSTS FOR THE FIRST SIX MONTHS OF 1960

	Total Costs	Akron Terminal & Station Costs	Road Running Costs	Northern Switching & Car Handling Costs	Cost Per Frt. Car Mile (6,327,000 Car Miles Loaded & Empty)	Cost Per Northern Interchange Loaded or Empty (70,350 Interchanges)	Cost Per Northern Shipped or Received Loaded Car	Cost Per Akron Interchange All Cars Loaded or Empty (65% of Terminal Expenses Divided by 49,000 Cars)	Cost of Akron Switching AC&Y Shipper Tracks Per Loaded Car (35% of Terminal Expense Divided by 7,700 Cars	Cost of Akron Switching by Belt or Other Carriers (Net Swg. Charges of $123,000 Divided by 9,000 Loaded Cars)	Cost Per Akron Loaded Car	Cost Per Overhead Loaded Car
MAINTENANCE OF WAY EXPENSES												
Miscellaneous rentals	$ 8,000	$	$ 8,000	$	$	$	$	$	$	$	$	$
Yard expenses	53,000	53,000										
Road expenses (Foregoing allocation applies 85% expense to line beyond yard limits)	297,000		297,000									
Payroll taxes & fringe ben.-yard	4,000	4,000										
-road	24,000		24,000									
Property taxes - yard	8,000	8,000										
- road	50,000		50,000									
Undistributed Pur. & St. expense	1,000		1,000									
	$ 447,000	$ 65,000	$382,000		.0604							
MAINTENANCE OF EQUIPMENT EXPENSES:POWER (Note)												
Locomotive rentals & deprec.-yard	$ 21,000	$ 21,000										
-road	48,000		23,000	25,000								
Yard locomotive repairs-direct	42,000	42,000										
-indirect	9,000	9,000										
Road locomotive repairs-direct	97,000		73,000	24,000								
-indirect	20,000		16,000	4,000								
Property taxes-yard locomotives	5,000	5,000										
-road locomotives	11,000		5,000	6,000								
Payroll taxes & fringe ben.-yard	4,000	4,000										
-road	10,000		6,000	4,000								
Undistributed Pur. & St. expense	1,000		1,000									
	$ 270,000	$ 81,000	$126,000	$ 63,000	.0199	0.90	1.80					
TRANSPORTATION EXPENSES (Note)												
Indirect yard transp. expense (Represents 45% of indirect transportation expense. Payroll ratio allocation.)	$ 47,000	$ 47,000										
Yard crew expense	$ 205,000	$ 205,000										
Yard clerks & yardmasters	51,000	51,000										
Fuel, enginehouse & misc. expenses	29,000	29,000										
Undistributed Pur. & St. expense	4,000	4,000										
Payroll taxes & fringe ben.-yard	27,000	27,000										
Total Yard & Terminal Expense	$ 365,000	$ 365,000						4.80	16.50		(21.30-26.10 or (16.80-25.60	
Net Akron switching expense paid other carriers (Belt, 7,913 cars; others, 1,100 cars)	$ 123,000	$ 123,000								12.00-16.00 13.50 Av.		
E. Akr. station expense (distributed over 17,000 loaded cars)	$ 45,000	$ 45,000									2.65	
Indirect road transp. expense (Represents 55% of indirect transportation expense. Payroll ratio allocation.)	$ 57,000		$ 45,000	$ 12,000								
Road crew expense	208,000		145,000	63,000								
Train supplies	65,000		54,000	11,000								
Enginehouse expense	21,000		14,000	7,000								
Joint tracks and facilities	22,000		18,000	4,000								
Fuel & miscellaneous expense	95,000		71,000	24,000								
Dispatching expense	23,000		16,000	7,000								
Stations (other than East Akron)	81,000		27,000	54,000								
Payroll taxes & fringe ben.-road	30,000		20,000	10,000								
Excise taxes	30,000		30,000									
Undistributed Pur. & St. expense	7,000		5,000	2,000								
Total Road Expense	$ 639,000		$445,000	$194,000	.0703	2.80	5.60					
Car Hire-per diem 168,000 days	$ 483,122						20.00				20.00 or 12.00-15.00	3.00 or 12.00-15.00
-mileage	55,809											
Executive & Industrial Expenses	$ 95,000						2.30				2.30	2.30

OF AC&Y BREAK-EVEN COSTS FOR THE FIRST SIX MONTHS OF 1960 (continued)

	Total Costs	Akron Terminal & Station Costs	Road Running Costs	Northern Switching & Car Handling Costs	Cost Per Frt. Car Mile (6,327,000 Car Miles Loaded & Empty)	Cost Per Northern Interchange Loaded or Empty (70,350 Interchanges)	Cost Per Northern Shipped or Received Loaded Car	Cost Per Akron Interchange All Cars Loaded or Empty (65% of Terminal Expenses Divided by 49,000 Cars)	Cost of Akron Switching AC&Y Shipper Tracks Per Loaded Car (35% of Terminal Expense Divided by 7,700 Cars	Cost of Akron Switching by Belt or Other Carriers (Net Swg. Charges of $123,000 Divided by 9,000 Loaded Cars)	Cost Per Akron Loaded Car	Cost Per Overhead Loaded Car
ccounting & Treasury Expenses (Excluding East Akron station)	$ 135,000						3.30				3.30	3.30
raffic Expenses	321,000						7.90				7.90	7.90
Sub Total	$2,976,931	$ 677,000	$953,000	$257,000	$.15	$3.70	$40.90	$4.80	$16.50	$12.00-16.00	$52.95-62.25	$16.50
Add Car Rentals		538,931					Add inter-change costs plus mileage loaded and empty at 15¢ per mile				($45-$57 on mileage cars) Add Northern interchange costs, plus mileage load-ed & empty at 15¢ per mile to determine total cost.	($25-$28 on mileage cars) Add all inter-change costs, plus mileage loaded & empty at 15¢ per mile to determine total costs
Add Executive, Accounting & Traffic Overhead		551,000										
RAND TOTAL	$2,976,931	$1,766,931	$953,000	$257,000								

ote: In allocating Maintenance of Equipment and Road Transportation Expenses between Road Running and Road Switching, allocations were based on salaries for through and way trains, train miles in each service, number of trips in each service, locomotive hours in each service, or pulling miles of locomotive units, whichever was most appropriate. The only arbitrary allocation was to assign one-third of road station expense to communication service and two-thirds to terminal services for cars.

kron, Ohio
1-9-1960

EXHIBIT A

FORMULA FOR DETERMINING YARD AND TERMINAL COSTS

In endeavoring to develop a formula for measuring yard and terminal costs, I have tried to reconstruct the traffic pattern of the railroad for the first six months of 1960. Judging by our various car reports, as well as the recapitulation of car mile reports, it appears that during the first six months there came into the Akron yard from the west approximately 20,000 loads and 6,000 empties. Of this total 15,700 loads and 4,000 empties were delivered to connections including the Belt. Going west from the Akron yard it appears that there were approximately 10,000 loads and 13,000 empties, of which 6,600 loads and 9,000 empties came from connections including the Belt. Thus, a total of 49,000 cars passed through the Akron yard, including about 30,000 loads and 19,000 empties. The yard handling report for the first six months shows 85,000 cars handled, but this total represents a double count for cars that come in and are then delivered to connections or for cars that come from connections and then go out. If all cars passing through the yard as I calculated it went to and from connections, the yard handling count would be approximately 98,000 instead of the 85,000 shown. The balance of 13,000 or 14,000 represents loads and empties distributed to and from Akron shippers on the AC&Y. Of this number approximately 7,700 are loads, and it is for these 7,700 cars that our actual switching to and from industries is performed.

Discussions with our yard superintendent indicated that on a typical day five crews are used for assembly and disassembly work and for delivery to connections, while the remaining four crews are used primarily for switching purposes, although even these make some connection deliveries. Taking into account the weekend slack, I have assumed that a typical week involves 55 switching crews, with 33 being used primarily for assembly and disassembly work and connection delivery, and the other 22 primarily for switching. Allowing 1/8 of the time of the four genuine switching crews for assembly delivery also results in a total of 65% of our yard expense assignable to classification and delivery operations and 35% assignable to genuine switching. Sixty-five percent of total yard expense can appropriately be charged against the 49,000 loaded and empty cars to determine the cost per car handled, whether it be loaded or empty. Thirty-five percent of our yard expense can be assigned against the 7,700 loaded cars handled to and from shippers on our own tracks. In the case of transportation expenses, the results for the first six months are $4.80 for each of the 49,000 cars handled in or out of the yard. To this figure should be added a cost of $16.50 per loaded car switched by our switching crews, or, in the case of traffic delivered to connections, the appropriate adjusted switching charge made by the Belt Line or the other carrier involved. A similar 35-65% breakdown appears applicable in the case of maintenance of way expense assignable to yard, and in the case of maintenance of equipment expense assignable to yard.

East Akron station expenses will be charged on a per loaded car basis against all of the loaded cars handled into and out of Akron to or from our shippers or consignees, even if located on the Belt or another Akron carrier.

EXHIBIT B

FORMULA FOR DETERMINING ROAD SWITCHING COSTS

A traffic analysis of our operations west of Akron during the first six months of 1960 indicates the following approximate number of car handlings: overhead cars moving west, 1,506; west overhead cars picked up west of Akron, 200; overhead cars moving east, 7,167; overhead cars discharged before reaching Akron, 1,000; overhead coal cars on and off, 14,700; Carey loads, 6,900; west of Akron forwarded and received loads, 2,000; return handling on those loads, 2,000; Akron forwarded cars, 8,650; Akron received cars, 7,227; empties eastbound, 6,000; empties westbound, 13,000; total, 70,350.

The foregoing number of car handlings must be charged against our expenses incurred in road switching. These expenses in turn were arrived at by making a distribution of road transportation expense between running operations and switching operations as follows:

1. Crew expense was based on salaries for way trains as against salaries for through trains.

2. Fuel expense was assigned 25% to switching operations, based on the fact that about 1/6 of the pulling miles were accounted for by way trains and 1/9 of the fuel expense of the through trains was consumed in switching operations.

3. Enginehouse expense was assigned on the basis of the number of trips for through trains and way trains.

4. Train supplies and expense was assigned on the basis of the pulling miles performed by the engines in way service, as contrasted with through service.

5. Joint track and facility expense was assigned on the basis of relative train miles in through and way service.

6. Dispatching expense was assigned on the basis of the number of trips in through and way service.

7. Station employee expense west of Akron was assigned arbitrarily 1/3 to through service and 2/3 to switching service on the assumption that not over 1/3 of the agents' work is devoted to communications.

8. Unallocated expenses were assigned on the basis of the relative number of train miles of through and way trains.

Accumulated, all of the road switching expenses as indicated above provide a total cost of our road switching, into which is divided the 70,350 car handlings to determine the cost per car handling out on the road.