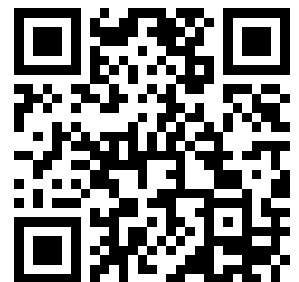

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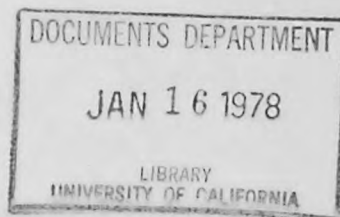
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STUDY OF MERGER ALTERNATIVES:
// RUN-THROUGH TRAINS

A REPORT TO THE
RAIL SERVICES PLANNING OFFICE,
INTERSTATE COMMERCE COMMISSION



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By

R. L. Banks & Associates, Inc.
900 17th Street, N.W.
Washington, D.C. 20006

September 21, 1977

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Foreword

This report represents the first effort by the Rail Services Planning Office (Office) to supplement a series of reports it is publishing under its nationwide study of railroad mergers. It was prepared under contract with R. L. Banks & Associates, Inc., and any findings included therein are not necessarily supported by the Office.

On April 15, 1977, the Office issued its Initial Paper followed by distribution of seven merger Issue Papers between August 1 and September 15, 1977. Following public participation and comment on the Issue Papers, the Office will publish a Preliminary Report on November 1, 1977 and a Final Report by February 1, 1978.

This Report is intended to expand the discussion on Run-Through-Trains contained under Section 11 of Merger Issue Paper No. 7, Alternatives to Merger, mailed to you on August 18, 1977. The subject of Run-Through-Trains (and pre-blocking) is given special attention by the Office because it involves coordination techniques by the railroads which are capable of attaining a portion of the advantages generally ascribed to mergers without going through the merger process.

The Office welcomes written comments on this Report either separately or in connection with Issue Paper No. 7. Comments should be filed with the Rail Services Planning Office, Section of Transportation Policy Planning, 1900 L Street, N. W., Washington, D. C. 20036, and marked to the attention of "Rail Merger Study".

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R.L.BANKS & ASSOCIATES, INC.



900 17th Street, N.W., Washington, D.C. 20006

(202) 296-6700

August 30, 1977

Mr. David J. DeBoer
Chief, Section of Transportation
Planning
Rail Services Planning Office
1900 L Street, N.W.
5th Floor
Washington, D.C. 20036

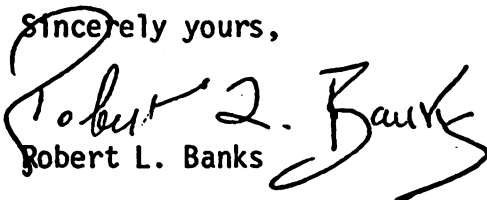
Dear Mr. DeBoer:

The document transmitted herewith, "Study of Merger Alternatives: Run-Through Trains," has been completed pursuant to RSPD Order No. DP 77-7003 of March 4, 1977.

The required research was accomplished in major part by Messrs. Charles E. Shaw and Edward A. Garvey of this firm, but it needs to be acknowledged that this report would not have been possible were it not for the responsiveness of and encouragement received from many operating officials on several railroads, for which grateful appreciation is tendered. Traffic executives of numerous rail customers were also extremely generous in the assistance provided to the authors. A special word of thanks is due Mr. James L. Martin, Vice-President Operations and Maintenance, Association of American Railroads, and Mr. James E. Bartley, Executive Vice-President of the National Industrial Traffic League, whose enthusiastic cooperation facilitated the research effort.

It has been a privilege to work with you and your staff on this timely matter.

Sincerely yours,


Robert L. Banks

RLB:jrb

Enclosure

STUDY OF MERGER ALTERNATIVES: RUN-THROUGH TRAINS

Table of Contents

	<u>Page</u>
I. EXECUTIVE SUMMARY.....	1
II. INTRODUCTION.....	7
III. SERVICE STATUS: 1977 - RAILROAD OPERATIONS.....	12
IV. SERVICE STATUS: 1977 - USER PERSPECTIVES.....	34
V. BACKGROUND.....	48

Number

Maps

One Run-Through General Freight and TOFC Trains Operated by Eleven Railroads and Their Connecting Lines.....	13
Two Run-Through Unit Coal Trains Operated by Six Western and Mid-Western Railroads.....	14

Charts

A Quarterly Trend of Loads Originated, 5 Western District Carriers.....	30
B Quarterly Trend of Loads Received, 5 Western District Carriers.....	31

Tables

1 Estimated Run-Through Interchange Traffic at 46 Terminal Areas.....	59
2 Volume Movements on Run-Through Trains, by Commodity and Route, Spring 1977.....	61
3 Run-Through Trains Reported to the ICC by the AAR.....	63
4 Arrangements for Pre-Blocking of Cars on Other Than Run- Through Trains Reported to the ICC by the AAR.....	69

Table of Contents
(continued)

Number

Appendices

One	Study Design
Two	Fast Freight Lines, December, 1908
Three	Relevant Excerpts From Company Publications
Four	Bibliography

I. EXECUTIVE SUMMARY

This report describes a study sponsored by the Rail Services Planning Office of the Interstate Commerce Commission, which evaluates run-through trains and pre-blocking as coordination techniques employed by railroads to attain a portion of the advantages generally ascribed to mergers. Run-through trains move in expedited service over more than one railroad with little or no change in consist enroute, while pre-blocking involves the transfer of groups of cars between railroads without the cost and delay of normal interchange procedures.

Included in the study was a literature search into the background and present status of run-through trains and pre-blocking as well as inquiries directed toward samples of 11 railroads and 22 shippers. Eliminating those counted more than once, the survey identified 239 individual run-through trains operating over 34 railroads. The shippers surveyed moved approximately 4.5 million annual carloads of a wide variety of commodities.

Run-Through Trains

The operation of run-through trains to avoid classification at interchange points has experienced considerable growth in the last 15 years. Although locomotive and caboose pooling are not essential to run-through train operation, these concepts represent a more refined application of the technique. Over 86 percent of the 239 trains for which data were collected pooled

both locomotives and cabooses, 3.5 percent pooled only locomotives, 1.8 percent pooled only cabooses, while 8.5 percent did not use equipment pooling as an integral aspect of their run-through operations.

Awareness by the railroad industry that run-through operations are a decided advance over prior operational methods is evidenced by the current operation of several hundred run-through trains within and between each territory in the U.S. and between the U.S. and Canada. Moreover, notwithstanding many competing demands for capital, several railroads have invested in facilities explicitly designed to accommodate run-through operations, for example, physical connections between the former Lehigh Valley and Reading (now ConRail) at Wilkes-Barre (Dupont), Pennsylvania, and between Santa Fe and Penn Central (now ConRail) at Streator, Illinois.

A principal advantage of run-through train service noted by the 11 participating carriers is reduced yard congestion at major terminal areas. A reduction in car switching and accompanying congestion at 46 terminals is implied by the fact that, typically, about half the interchange traffic traversing those facilities is now carried on run-through trains, although at specific individual terminals, the traffic so handled ranges from a low of 4 percent to a high of 100 percent.

The impact of run-through trains on traffic may be judged from the fact that 20 of the 22 participating shippers indicated that the resulting service improvements were responsible for intramodal traffic diversion from carriers which do not operate run-throughs. Eight shippers suggested

that in some cases run-through service could divert traffic from other modes. In any event, the research leads to a conclusion that high-quality rail service, superior to that generally available, is of more consequence to many contemporary shippers than the rates or prices charged. Another attractive element of run-through service cited by shippers is decreased incidence of lading damage.

Since it is a shipper consensus that run-through trains provide an attractive service, the rail industry would apparently find it advantageous to expand such service where operational and traffic conditions are favorable. Interline traffic levels were high enough to justify inauguration of run-through trains in 95 percent of the operations assessed, indicating that the service is provided to lower costs as well as to improve service at existing traffic levels. In stressing that run-through trains could be a more effective business stimulant as well as an operating convenience, shippers suggested improvements to the present character of the service which include: increased advertising, such as schedule displays for all run-through trains in The Official Railway Guide; monitoring the success or failure of present service; and following through with improvements in other areas of rail service including additional run-through trains if necessary, and the pooling of crews, as well as equipment, where circumstances permit.

The focal point of the run-through train service identified in this study, as shown on Map One, is the Union Pacific operation at North Platte, Nebraska. Over 60 daily trains are made up at this yard complex, with blocks

for points as far east as Albany, New York on the Consolidated Rail Corporation and for all major points on the West Coast. By adroit application of the run-through concept, the Union Pacific has virtually implemented single carrier line-haul service levels to the Chicago and St. Louis gateways without the necessity for tedious and expensive acquisition of connecting routes.

Run-through trains provide numerous benefits for the railroads involved, including cost savings from reduced switching and per diem, increased car and locomotive utilization, additional business from improved service and reduced loss and damage claims. The attendant cost savings estimated by a few participating railroads would appear to be substantial and should in themselves provide the necessary incentive for both continuation and expanded application of the run-through train concept.

The run-through train service has numerous possibilities for expansion, such as transcontinental service with entire trains running coast to coast, competing in elapsed time and reliability with the dozen transcontinental motor common carriers of general freight which now possess and exercise such operating rights. Also, coal movements in run-through trains are increasing in number and will continue to increase to meet the nation's energy consumption. Expansion of run-through service is also possible from continued growth in TOFC traffic.

Users of run-through service support the concept unanimously, want the service improved, desire to know more about it, and want more of it. Shippers interviewed appreciate that the railroads are working together

providing the coordination necessary to provide this expedited service. Cost savings indicated to be realized by users included better car utilization for those shippers with privately-owned car fleets and reduced inventory costs for major manufacturers.

Pre-Blocking

In connection with the basic study of run-through trains, the concept of pre-blocking cars on other than run-through trains, to avoid classification at interchange points, was also examined on a limited basis.

While the pre-blocking technique has been used by the railroad industry for many years to expedite traffic, the recent rapid growth of run-through trains has resulted in a reduction in the number of other trains on which cars may be pre-blocked.

The investigation indicated that the pre-blocking technique is also effective in reducing operating costs to the railroad industry and the cost of distribution to rail shippers. Pre-blocking of cars provides for increased benefits for both carrier and user in the same manner, but not on the same scale as run-through train service. Pre-blocking provides for added flexibility in expedited service when volumes are such that entire train loads are infeasible. To this effect pre-blocking is practiced more widely east of Chicago and St. Louis because origin and destination points are more numerous and more geographically concentrated in the East and volumes of traffic more dispersed. A majority of transcontinental rail traffic appears to be currently pre-blocked and provides for some efficiency and cost savings. As volumes of traffic increase in the future, these blocks could become

sufficiently large to encompass entire trainloads. As a result the rail industry would also seem to find it advantageous to expand use of the pre-blocking technique where operational and traffic conditions permit.

Run-through train service and pre-blocking techniques enable the railroads to work together to provide improved service, attract more traffic, and customers. The concepts reviewed here, run-through trains and pre-blocking, provide only a portion of coordination benefits that could be achieved by actual corporate merger, but they are a harbinger of future railroad operations in which traffic decline is arrested and industry expansion is once again a foreseeable near-term objective.

II. INTRODUCTION

One of the important advantages generally attributed to railroad mergers is the service improvement and cost reduction opportunities which present themselves when formerly independent entities are operated by a common management. This report arrays the findings of a study sponsored by the Rail Services Planning Office of the Interstate Commerce Commission, to evaluate railroad use of run-through trains and pre-blocking as techniques of operational coordination which railroads have already tested in actual service, and which require a minimum of capital investment to attain at least a portion of the coordination advantages generally ascribed to mergers. This study pursued the development, incidence, extent, successes and failures, and factors affecting the feasibility of run-through train operations as well as the technique of pre-blocking; it presents the first organized body of information on such operations, based on a sample of eleven railroads whose combined experience is believed to be reasonably representative of the extent to which these techniques were employed by railroads in the United States in Spring of 1977.

For the present purpose, a run-through train is defined as a freight train which moves in scheduled or unscheduled expedited service over more than one railroad with little or no change in consist enroute. These trains may set out or pick up one or several blocks of cars at one or more interchange points, but the majority of the cars in the consist (i.e., make-up, composition) of each such train move in through service in that train as it is operated over more than one railroad. Whether or not locomotives

and cabooses are pooled in run-through trains, the interchange operations are conducted in such a manner as to minimize delay time. The following functions required with the interchange and reclassification of the cars are altogether avoided:

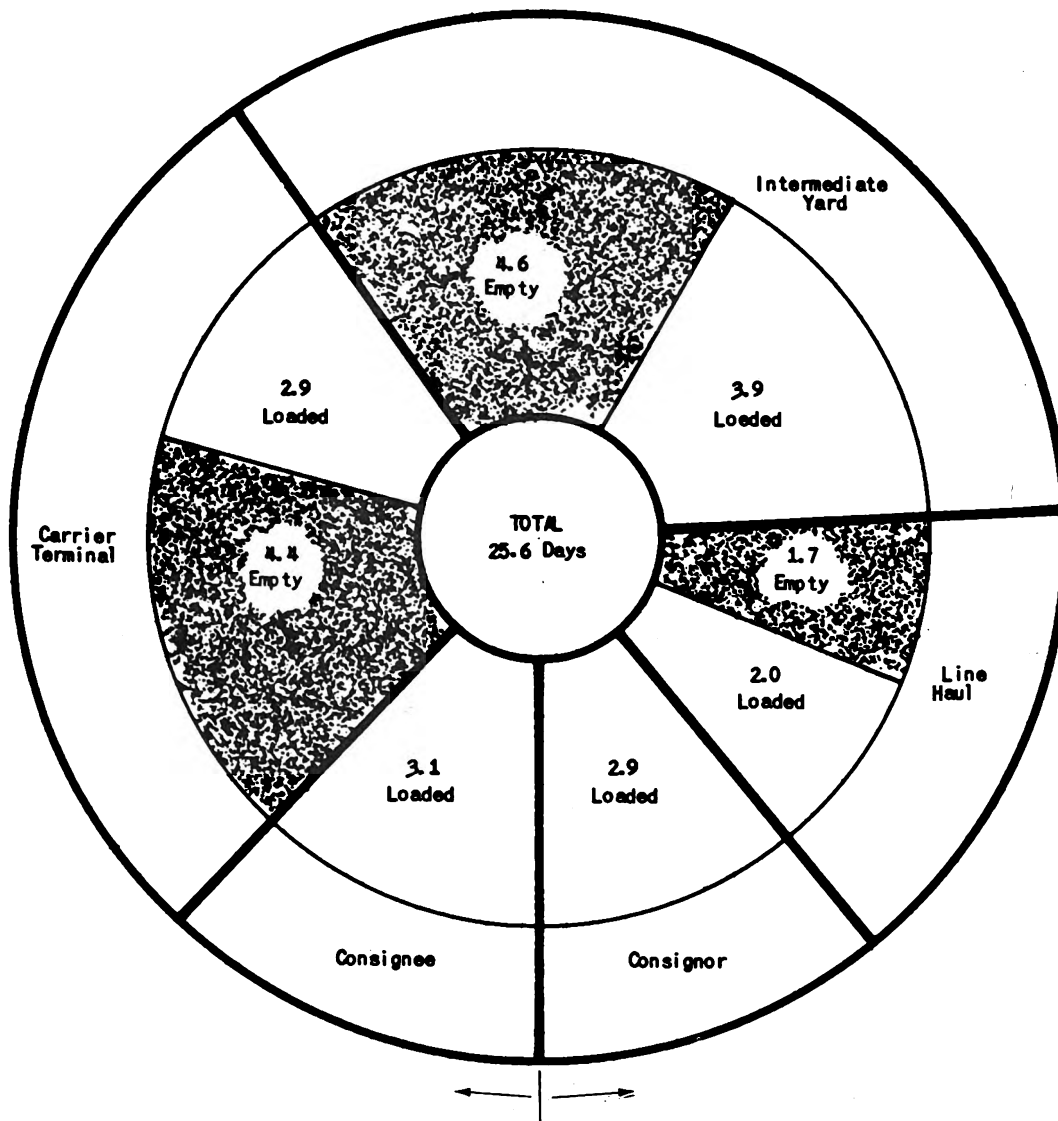
1. Bleeding air from brake system;
2. Switching cars (flat or over hump) from receiving yard to classification yard;
3. Switching cars from classification yard to forwarding yard;
4. Coupling air hoses;
5. Charging brake system with air.

Furthermore, a train inspection and air brake test can also be avoided if the mileage to next terminal does not exceed the FRA-prescribed 500-mile interval.

Consequently, the most important attribute of run-through operations, as compared to conventional train movements, is the elimination of time spent at interchange points and intermediate yards, as illustrated by the diagram below, which shows that 8.5 days or 32 percent of average total car cycle time are spent at intermediate (including interchange) yards. Through the use of run-through trains, the intermediate yard time could, almost always, be eliminated resulting in a substantial reduction in overall load-to-load cycle time and concomitant improvement in freight car utilization. This is, of course, one of the principal advantages of unit trains, which in the present context may be described as simply a specialized application of the run-through train concept. In addition to the almost complete

elimination of intermediate yard time, unit trains also eliminate carrier terminal time as well as significantly reducing loading and unloading times at the shipper and receiver docks. Together these elements account for over 2/3 of total average car cycle time.

ACTIVITY COMPONENTS OF TYPICAL CAR CYCLE ^{1/}
(IN DAYS)



^{1/} D. P. Ainsworth, et al., Toward an Effective Demurrage System, (Greenwich, Connecticut: Rebbie Associates, 1972).

To learn first-hand about the development, present status and potential of run-through trains organized inquiries of railroads, shippers and consignees who make use of run-through train services were conducted. Interviews with operating and traffic officers of eleven railroads, as well as with traffic officials of twenty-two rail customers were the focus of the research effort, buttressed by data from trade organizations and a search of the relevant literature. Details concerning the study design may be found in Appendix One.

Run-through trains are by no means a recent innovation. In fact, the concept has existed for quite some time on many railroads, their modern manifestation beginning before the mid-twentieth century.^{2/} Several of the railroads interviewed claimed to be the first to initiate run-through train service. Which carrier first instituted service of this type is not important for the purpose of this investigation. What is relevant, however, is the fact that run-through trains are operating on a large scale throughout the country. Knowledge of the experience of railroads and shippers with current run-through trains is obviously necessary to any objective assessment of the opportunities to expand their use as a step in inter-rail-road coordination.

^{2/} As discussed in Section V, coordinated interline service dates back a century or more, and through trains such as Southern Pacific-Rock Island fruit blocks and the Boston & Maine-New Haven "Maine Bullet" were well established fifty years ago.

In addition to run-through trains, the complementary concept of pre-blocking was also examined on a limited basis, as feasible in connection with the basic study of run-through trains. In this technique, a solid, pre-classified block of cars is interchanged between railroads and forwarded in an outbound train of the receiving carrier without being otherwise subjected to normal classification routines.

III. SERVICE STATUS: 1977

RAILROAD OPERATIONS

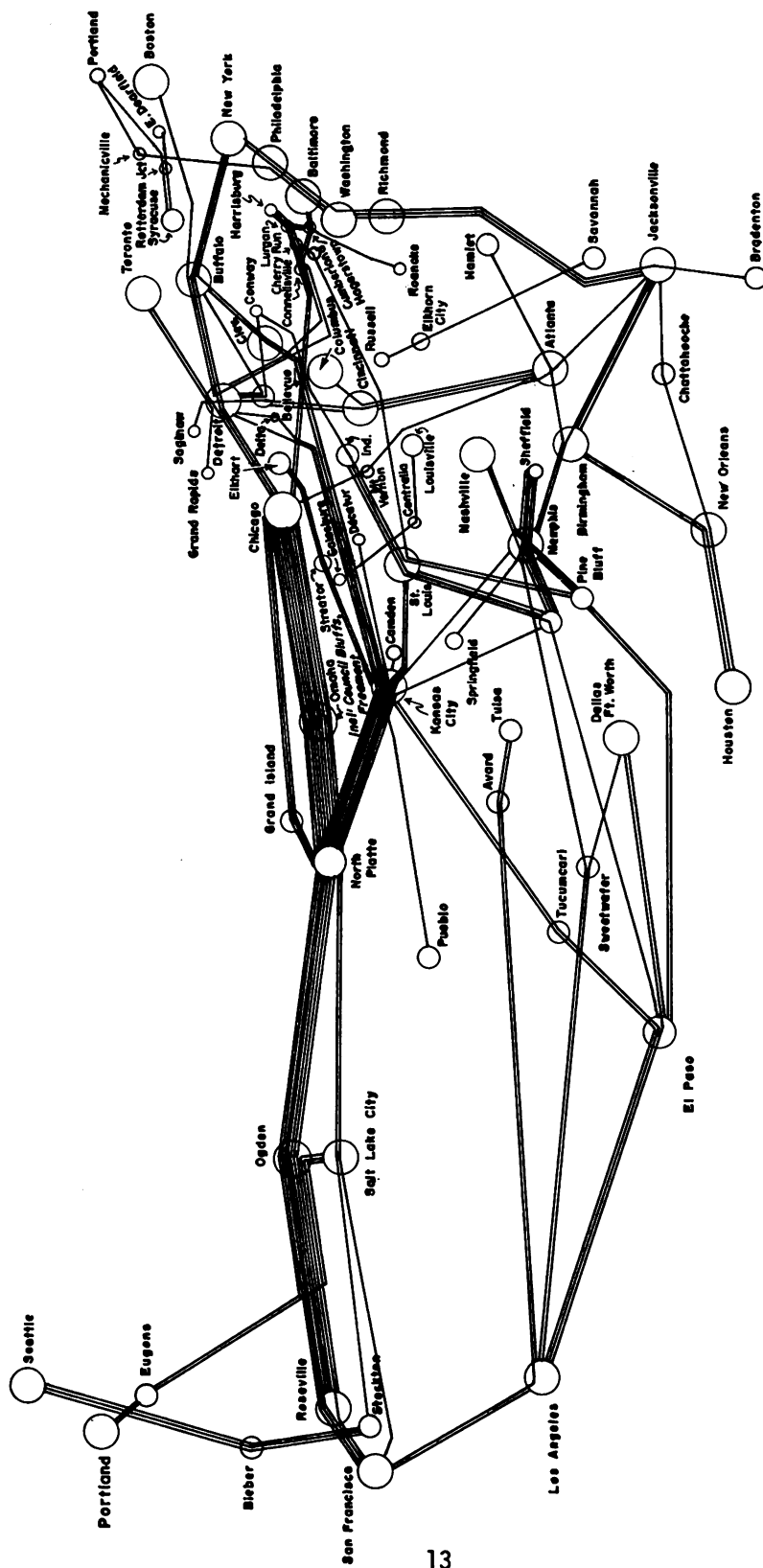
Eleven railroads, which together earned over 63 percent of total Class I Railroad freight revenues during 1976,^{3/} provided data pertaining to a total of 239 run-through train operations on 34 railroads.^{4/} The data discussed below thus reflect all run-through trains of 11 line-haul railroads, and some of such trains on 23 other line-haul or switching railroads. These run-through train operations included 117 different origin and destination points across the nation, and are considered to be a representative geographical sample of this type of railroad operation as it exists today.

The Situation

Map One, on the following page, indicates the extent of run-through operations reported by the 11 railroads sampled in the Spring of 1977, as well as the territories within and between which run-through trains are operating. Each line on the map denotes the operation of one daily run-through train in both directions. Some of the major movements of coal handled by run-through unit trains are shown on Map Two which illustrates the increasing importance of western coal, particularly to the midwestern market, and the extent to which the railroads have instituted unit train service to accommodate its movement.

^{3/} Association of American Railroads, Railroad Revenues, Expenses, and Income, Fourth Quarter, 1976.

^{4/} A total of 282 trains were counted due to reporting of the same trains by more than one surveyed railroad.



KEY

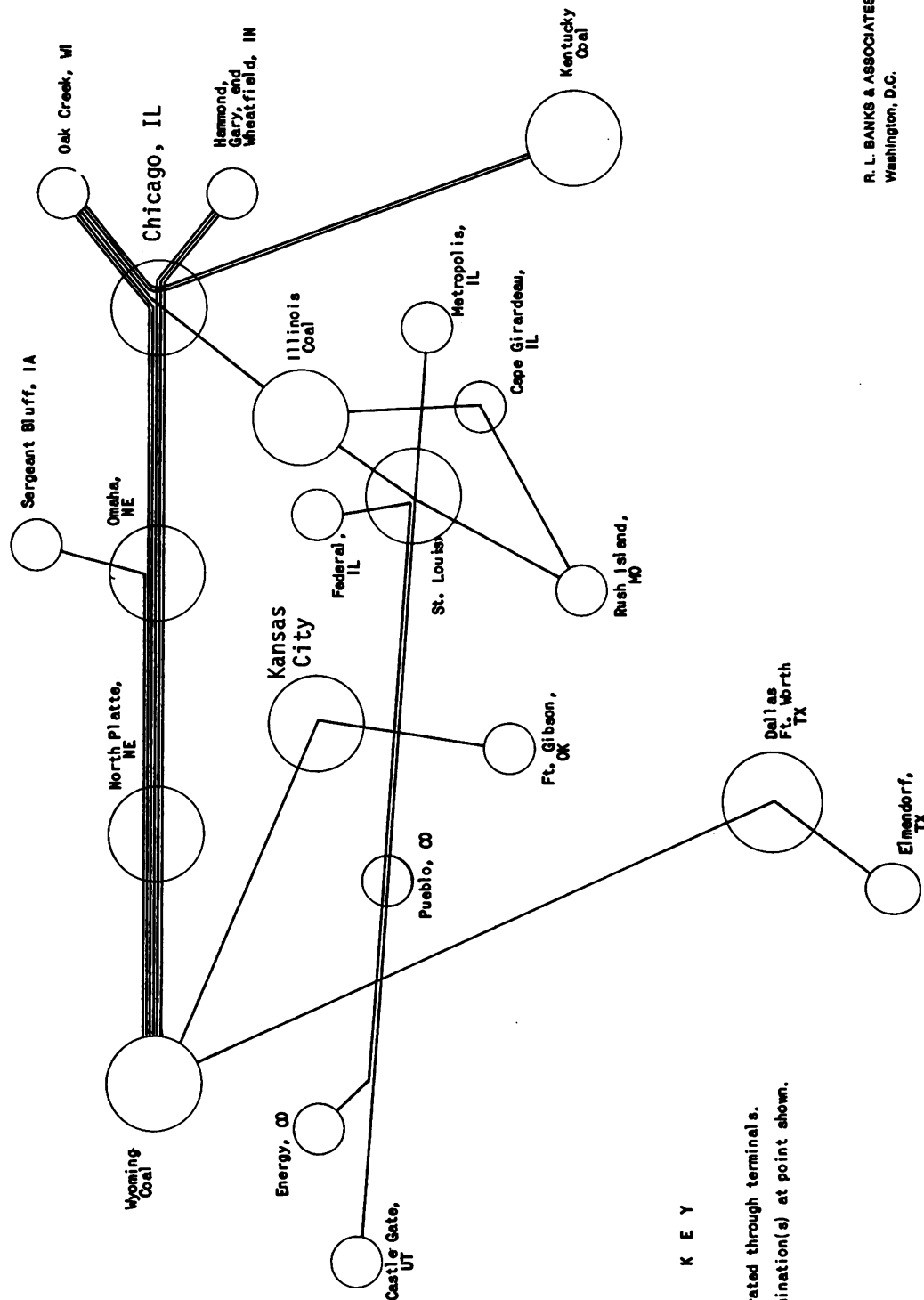
One daily run-through, both directions.

Operated through terminals.

Termination(s) at point shown.

R. L. BANKS & ASSOCIATES, INC.
Washington, D.C.

RUN-THROUGH UNIT COAL TRAINS OPERATED BY SIX WESTERN AND MID-WESTERN RAILROADS SPRING, 1977



Run-through trains comprised from 10 to 50 percent of the average daily through freight trains operated by the railroads participating in the study, as the following table indicates:

<u>Railroads</u>	<u>Avg. Daily Run-Through Trains^{5/}</u>	<u>Run-Through Trains as Percent of Scheduled Daily Through Freights</u>
Chessie	19	10%
Chicago & North Western	23	30
ConRail	20	10
Missouri Pacific	30	25
Norfolk & Western	21	20
St. Louis-San Francisco	10	20
Seaboard Coast Line	34	10
Southern	22	10
Southern Pacific	44	30
Union Pacific	48	50
Western Pacific	11	45

Run-through operations encompassed movements within and between each territory as well as between the East and Canada, as tabulated below.

<u>Territorial Movement</u>	<u>Run-Through Trains</u>
Within East	34
Within South	22
Within West	59
Between East and South	20
Between East and West	70
Between South and West	32
Between East and Canada	<u>2</u>
Total	239

^{5/} Includes trains reported by more than one railroad.

It can be noted from the above tabulation and Map One that run-through operations are more prevalent in the West than in the Southern or Eastern Territory; the West is involved in 161 run-through operations, the East has 126 and the South 74.

As illustrated by Map Two, a substantial amount of midwestern coal is moving in run-through unit train service by-passing major terminal areas of Chicago, Kansas City, Omaha and St. Louis. These movements are highlighted to show the growing number of unit coal trains carrying low sulfur coal from Wyoming to midwestern areas. Most of the movements from Wyoming were initiated less than 4 years ago. With increased production of Wyoming coal, as evidenced by the Powder River Basin project, additional unit coal movements can be expected in the near future. The run-through train concept will undoubtedly have an important role in moving this essential fuel.

Officials of the carriers participating in this study provided data pertaining to the development, operation and resulting benefits of their run-through train service as well as traffic figures pertaining to the gateways involved. Such data as are compiled by the railroads were made available for this study, but unfortunately they did not always include readily quantified information with respect to switching costs, savings, increases in traffic and improved equipment utilization.

The railroads were asked to provide information that directly pertained to development of each of the run-through trains in service, including factors prompting their initiation, special labor agreements, volume

sufficiency criteria, and the generation of new business. The following table arrays carrier responses as to factors prompting service development (some railroads cited more than one factor per train):

<u>Railroad Goal Prompting Run-Through Train(s)</u>	<u>Frequency of Citation</u>
Improve service at existing traffic levels	239
Lower costs	106
Car utilization enhancement	41
Locomotive utilization improvement	21
Traffic volume accommodation	21
Accommodate coal business	17
Eliminate yard congestion	11
Generate new business	7
Overflow from existing run-throughs	4
Economy of operation	3

The factors listed above are for the most part interrelated, as a goal of "lower cost" encompasses improved car and locomotive utilization as well as eliminating yard congestion and providing for economy of operation. Service improvements could and do by themselves improve traffic volume, generating overflow from existing run-through trains as well as stimulating new business. Run-through trains resulting from production at new coal mines are jointly initiated by shipper and carrier, with operating characteristics usually determined by mine and power plant location.

Labor Arrangements

During the process of developing, planning, scheduling and instituting a run-through train service, special labor agreements, or amendments to extant agreements, may be necessary to ensure expeditious interchange between the carriers involved. The participating railroads were asked to identify any special or adjusted labor agreements that had to be negotiated in the development of their run-through train service. Two railroads responded with the following examples:

1. Train and enginemen of 14 run-through trains interchanged in the Omaha area, formerly drawn from separate crew rosters at Fremont, Nebraska and Council Bluffs, Iowa, are now assigned as though these two separate points of actual interchange were a single common interchange point, thus providing greater flexibility in crew assignment.
2. Operation of 10 Southern Pacific run-through trains at the St. Louis gateway required labor concurrence in minor adjustments to extant agreements, to provide for Alton and Southern crews to operate into the Missouri Pacific yard (which is also used by St. Louis Southwestern, a Southern Pacific subsidiary).

Regulatory Concurrence/Compliance

The arrangements prerequisite to institution of 15 run-through trains on two other railroads required application to the Interstate Commerce Commission for approval of new trackage right agreements necessitated by selection of interchange points more convenient than those formerly

utilized. Approximately 15 percent of the run-through trains identified by the participating railroads required, prior to service inception, institutional changes of the types described. Not even these minor types of adjustment were needed to inaugurate the overwhelming preponderance of run-through services.

Regulations prescribed by the Federal Railroad Administration require that an air brake inspection and test be made every 500 miles and at interchange points on trains in normal service. The inspection primarily requires that the entire train be subject to an inspection on both sides in order to locate any cars on which the travel of the piston in the air brake cylinder is excessive, and the test is made to detect air leaks in the system. On run-through trains, the regulations require only that an inspection and test be made at 500 mile intervals without regard to interchange points, provided a document certifying the point at which the last inspection and test was made is placed on the train. This reduces the time consumed by prescribed inspection and test procedures on run-through trains. A representative of one railroad, however, expressed the opinion that the 500 mile rule is too stringent and that the mileage interval should be increased.

Traffic Sufficiency/Traffic Attraction

The participating carriers were asked if sufficient traffic were available at the onset of run-through trains to justify the service, or if, in fact, the service was initiated expressly to attract new business. They replied that 270 of the 282 trains identified had sufficient traffic when the

service was initiated. The remaining 12 run-through trains were mainly designed for TOFC (piggyback) traffic and were expressly added to attract new business. One railroad initiated run-through TOFC service starting with approximately 15 trailers per train in 1974. Currently the train is carrying in excess of 70 trailers per day and in some cases volume warrants the operation in two sections.

No figures were available from the railroads interviewed on the amount of traffic increase attained as a direct result of instituting run-through service. While all but two of the railroads stated that traffic had increased on their run-through trains, a portion of the increase can be attributed to self-diversion (from regular train service), to normal growth and/or to other factors.

Tabulated below are composite responses received from the railroads interviewed in reply to the questions shown regarding the traffic benefits realized from run-through operations.

<u>Question</u>	<u>Number of Trains</u>	<u>Response</u>
1. Was new traffic diverted from other railroads?	185	yes
	55	no
	42	unknown
2. Was new traffic diverted from other modes?	139	yes
	48	no
	95	unknown
3. Was traffic retained that would have been lost in the absence of run-through trains?	249	yes
	29	no
	4	unknown

Cost Reduction

All of the railroads interviewed stated that run-through operations had resulted in savings in switching cost but most of them had no supporting documentation. Total switching cost savings were estimated by Southern Railway to amount to \$5,155,052 annually, data furnished by the Seaboard Coast Line indicated annual savings of \$2,617,920, and the Norfolk and Western estimated a 50 percent reduction in car switching costs. The Frisco emphasized that savings were also realized in lower freight loss and damage expenses as a result of reduced switching, but had no figures available to support this view.

While the Missouri Pacific and Union Pacific had no estimates available of the savings realized from improved car utilization resulting from run-through operations, they did state that such savings were being realized through reduced time in terminals. Tabulated below are the responses from other railroads which offered some type of estimate of average or annual per diem savings from improved car utilization attributable to run-through operations:

<u>Railroad</u>	<u>Per Diem Savings</u>
Chessie	\$2,500,574
Chicago and North Western	12 to 24 hours/car
ConRail	at least one day/car
Norfolk and Western	25%
Seaboard Coast Line	\$3,272,400
Frisco	at least 25%
Southern	\$2,163,522
Southern Pacific	up to 48 hours/car
Western Pacific	12 to 24 hours/car

All the participating railroads stated that run-through operations generate savings from improved locomotive utilization, although the Missouri Pacific reported some specific trains for which no such savings are claimed. None of the railroads, however, had figures available as to the amount of these savings.

Reduced Yard Congestion

One of the advantages of run-through train service noted by the eleven participating carriers is reduced yard congestion at major terminal areas around the country. No data were available on terminal area car handlings correlated with run-through trains, but a reduction in such handlings and accompanying congestion is implied from the data in Table 1, which show the percentage of interchange traffic in run-through trains at 46 individual terminals. These data indicate that, typically, about half the interchange traffic at such facilities is now carried on run-through trains, although at specific individual locations, the traffic so handled ranges from a low of 4 percent to a high of 100 percent.

Although the data arrayed in Table 1, page 59, includes many of the nation's key rail complexes, the impact of run-through trains may be even more significant at interchange points than it appears on the surface. For example, three interchange points used for run-through trains are designed to completely avoid major terminals once used for interchange. Three examples of these sub-terminals include Camden, Missouri (avoids Kansas City); Fremont, Nebraska (avoids Omaha) and Streator, Illinois (avoids Chicago).

Service Design

Since improved service is one of the primary objectives of the run-through concept, on-time performance is considered to be an important factor in the operation of run-through trains. On time performance was rated important with respect to 259 of the 282 trains reported. In addition to providing improved service in and of itself, on-time performance is also essential to the economics of the operation, particularly when locomotives and/or cabooses are in interline pooled service. This equipment is usually scheduled to operate on run-through trains in the reverse direction and delays enroute could cause disruption in the running cycle, necessitating the use of additional locomotives and cabooses.

Closely related to on-time performance are cut-off times, provided by the railroads to insure prompt movement of the run-through trains. The railroads interviewed advised that 198 out of 282 run-through trains were scheduled with cut-off times applicable not only at origin terminals but also to blocks of cars assembled for pick-up at intermediate terminals. Scheduled TOFC run-through trains usually have published cut-off times for the receipt of trailers at the initial terminal to allow sufficient time for trailer loading on flat cars.

In order to ensure prompt movement through interchange points, railroads typically have pooling agreements for locomotives and cabooses, allowing this equipment to run between origin and destination point of the run-through train service although in some services pooled equipment may

operate on another's trackage short of the final run-through destination. The following table shows, for participating railroads, the number of sampled trains which use equipment pooling:

<u>Equipment Pooled</u>	<u>Number of Trains</u>	<u>Percent</u>
Power and caboose	243	86.2%
Power only	10	3.5
Caboose only	5	1.8
None	24	8.5

In the applicable pooling agreements, arrangements are made to balance the contribution of run-through power and cabooses. The most popular basis for equalizing equipment use is horsepower-hours, used for 157 trains, followed by horsepower-miles, applied in the case of 90 trains. Other, less popular, equalization methods involve direct cash payment, or the use of locomotives or cabooses in other than run-through service. Caboose contributions are generally balanced by per-diem charges or by use of a mileage factor. One carrier reported the use of a formula that converts caboose-miles to horsepower-hours thus necessitating only a single figure to balance the pooling contribution at each monthly settlement.

In some instances it is infeasible for railroads to enter into locomotive and caboose pooling agreements due to equipment incompatibility. For example, some railroads require locomotives with dynamic brakes on their mountainous runs, but connecting lines in run-through train service may not have this equipment feature available. Another problem in locomotive

pooling is automatic train control (ATC). This track signaling device requires the lead unit in a train to be specially equipped to receive track circuit signals. In this case, pooling of power is nonetheless feasible, provided that a locomotive of the home railroad is assigned as lead unit when operating in ATC territory. Another problem identified by one of the carriers interviewed was that connecting line power was not equipped for fueling systems with automatic cut-off when tanks are filled, necessitating accomplishment of this task by slower, more conventional means.

The carriers involved in the study provided information as to the size of run-through trains as well as the average number of blocks for particular destinations carried on these trains. The average number of loads and empties per run-through train plus the average number of blocks carried is shown below:

<u>Railroad</u>	<u>No. of Trains</u>	<u>Avg. Blocks/Train</u>	<u>Avg. Cars/Train</u>	
			<u>Loads</u>	<u>Empties</u>
Chessie	19	2	44	28
Chicago & North Western	23	4	76	19
ConRail	20	2	47	37
Missouri Pacific	30		(Unavailable)	
Norfolk & Western	21	3	46	33
St. Louis-San Francisco	10	4	86	9
Seaboard Coast Line	34	3	42	31
Southern	22	3	59	42
Southern Pacific	44	2	64	33
Union Pacific	48	3	54	29
Western Pacific	11	4	32	23

In some cases run-through trains consist entirely of empty cars, such as the movement of empty mechanical refrigerator cars from the East Coast markets to the California growing areas during the perishable season. These cars are usually pre-blocked from the East Coast to Chicago and in turn, move from Chicago to California as run-through train service. The Chicago and North Western's premier run-through train was inaugurated in 1960 for the expedited return of UP and other western empties.

Run-through trains consisting entirely of loaded cars (excluding unit trains) primarily handle autos and auto parts, TOFC, and U.S. mail from midwestern areas to the West Coast. Perishable traffic is usually of sufficient volume to warrant completely loaded run-through trains moving from the California growing areas to the Midwestern and Eastern markets.

Run-through trains generally operate in both directions except where volume is insufficient to justify operation in the reverse direction or in the case of unique operations, such as the landbridge train operating between Charleston, South Carolina and Long Beach, California. Only 17 of the 282 trains reported by the participating railroads operate as single direction run-through trains. Directional balance is achieved by other trains for all one-way operations except the landbridge train, where containers move via water in response to international traffic flows.

Most run-through trains are operated on a daily basis as indicated below:

<u>Frequency</u>	<u>Trains</u>
Twice daily	1
Twice daily - six days/week	1
Daily	230
Six days/week	8
Five days/week	4
Twice weekly	6
Weekly	5
Irregular	27

Inter-Railroad Negotiation

A major factor in the development of run-through train service is the contact and subsequent negotiation with connecting lines. Carriers were asked which railroad department was responsible for initiating service. All of them designated the transportation or operating department as playing a central role in initiation of run-through train service, with attribution of joint transportation, sales and marketing initiatives in the case of 36 trains, and a single response crediting a shipper as the prime mover in initiating a run-through train. Also, railroad rate departments are credited with involvement with respect to run-through unit coal and ore trains.

Carriers were also asked if each run-through train was specifically initiated for a particular commodity or whether each was conceived in

order to improve the quality of interchange service with a connecting road. The following table shows carrier responses as to the number of mixed commodity trains developed to improve connecting service and the number of trains instituted in response to the movement requirements of specific commodities.

<u>Run-Through Purpose</u>	<u>Number of Trains</u>
Improve connecting service	205
Accommodate specific commodities	
Coal movements	35
Autos and auto parts movement	21
U.S. Mail	5
Perishable movement	3
Iron ore movement	3
Lumber movement	2
Petroleum and products movement	2
Chemical movement	1

The railroads sampled were also asked if any objections were raised by their connection(s) to the institution of run-through train service. Two railroads responded that minor objections were raised with regard to 13 trains, with no specifics furnished except in one instance where a connecting road expressed the belief that a run-through train would provide it with a shorter line haul as compared with conventional train service.

Impact on Traffic Patterns

Charts A and B, on the two following pages, depict graphically the quarterly trend of loads originated and received, respectively, by five Western carriers, the Atchison, Topeka & Santa Fe, Chicago & North Western, Chicago, Rock Island & Pacific, Southern Pacific and Union Pacific.

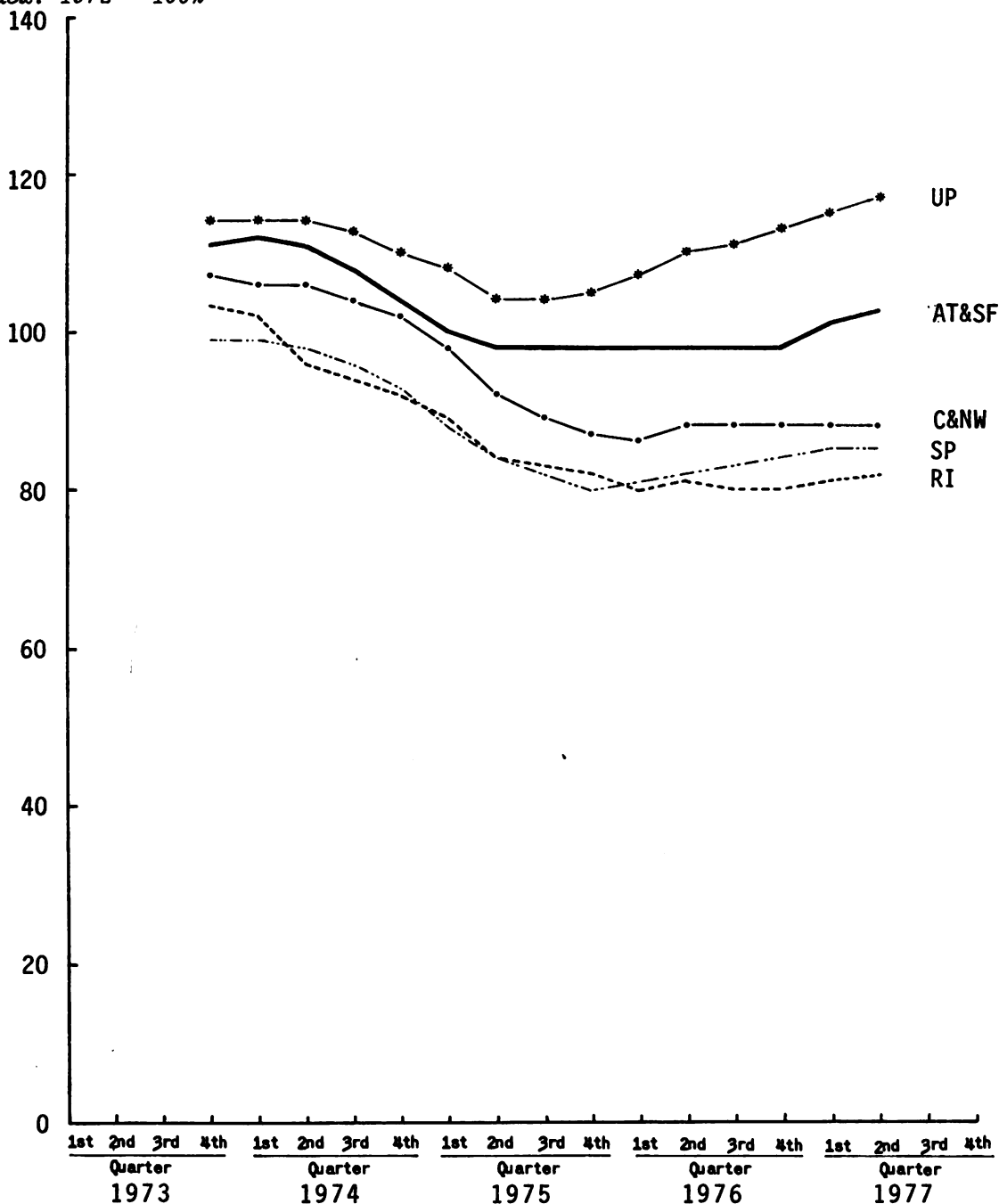
The purpose of the graphs is to help in assessing if the extensive East-West run-through train operations of the Union Pacific Railroad and the Chicago and North Western Transportation Company have had any effect on the traffic patterns of competing railroads.

The two charts show that traffic (measured by loads originated and received on the Union Pacific rebounded from the 1975 recession at a much faster rate than was experienced by other lines. Since the Chicago and North Western is now the principal connection to the Chicago gateway for Union Pacific, it is significant that, while originating traffic remains relatively the same on the Chicago and North Western following the recession of 1975, the loads subsequently received by that road increased at much the same rate as the Union Pacific.

Some of this increased interchanged business for the Chicago and North Western may have been gained initially because of the Rock Island filing for protection under Section 77(b) of the Bankruptcy Act in March of 1975; however, from the first quarter of 1976 the Rock Island merely arrested the downward trend in its loads received, while the Chicago and North Western loads received continued to increase.

QUARTERLY TREND OF LOADS ORIGINATED 5 WESTERN DISTRICT RAILROADS

Four Quarter Moving Average
Index: 1972 = 100%



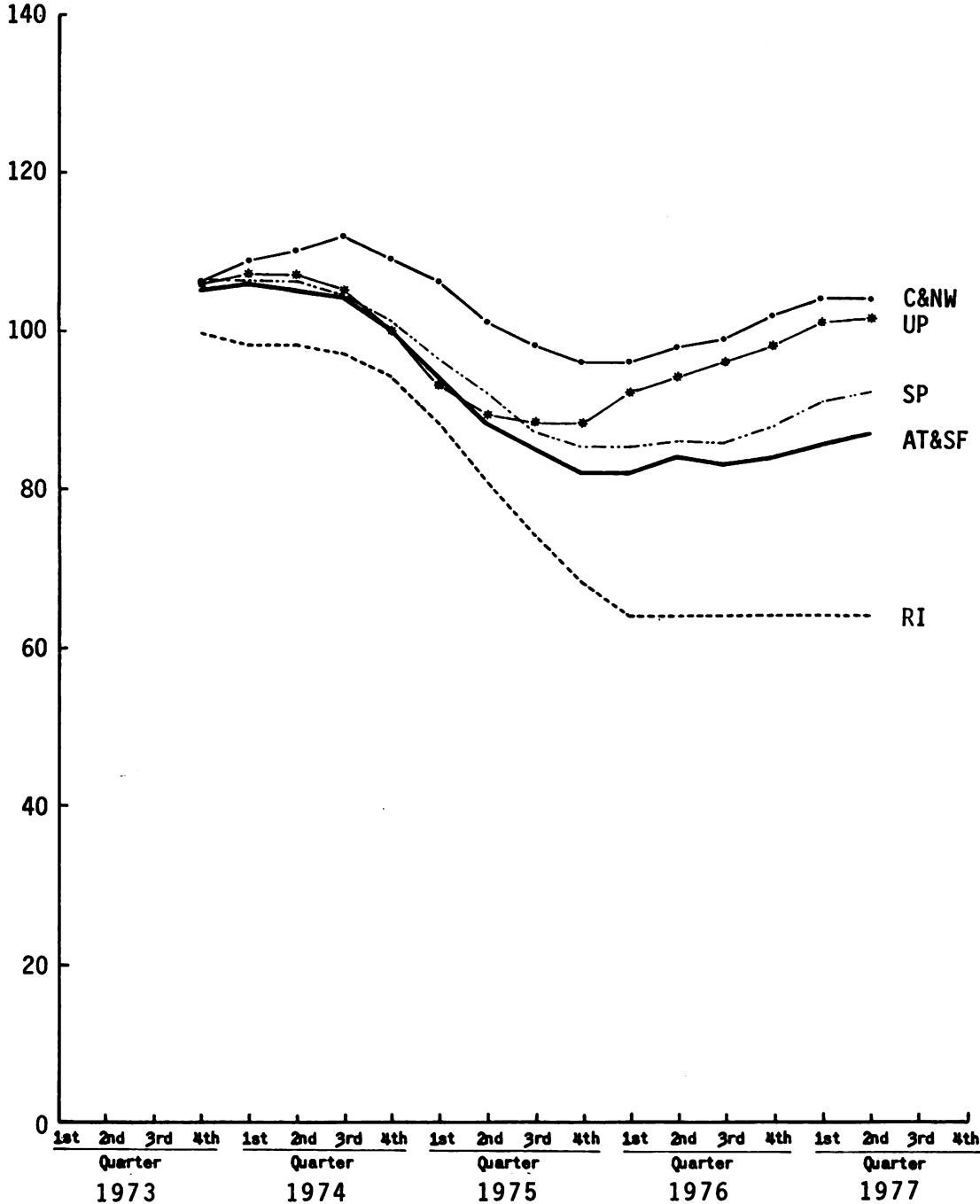
Source: Revenue Freight Loaded by Commodities and Total Received From Connections, Statement CS-54A, Washington, D.C., Association of American Railroads.



QUARTERLY TREND OF LOADS RECEIVED 5 WESTERN DISTRICT RAILROADS

Four Quarter Moving Average

Index: 1972 = 100%



Source: Revenue Freight Loaded by Commodities and Total Received From Connections, Statement CS-54A, Washington, D.C., Association of American Railroads.



The graphs thereby appear to indicate that, in consequence of their extensive run-through operations, Union Pacific may be originating more traffic and Chicago and North Western receiving more cars from Union Pacific, although its on-line originations remain flat in the period following 1975.

Pre-Blocking

Pre-blocking, as defined for this report, signifies the process of assembling or classifying blocks of cars for a non-local destination other than an interchange point. An example would be ConRail trains out of Elkhart, Indiana carrying cars blocked for North Platte, Nebraska on the Union Pacific, Janesville, Wisconsin on the Chicago and North Western, or the Pacific Northwest on the Milwaukee Road. Classification not considered as pre-blocking would be cars simply assembled for ConRail at Chicago by one of its western connections. Many stations on the Chicago and North Western, for instance, block cars for ConRail at Chicago. This practice benefits only the Chicago and North Western, however, as the cars require reclassification by ConRail at Chicago.

In addition to pre-blocking of cars for specific destinations on all run-through trains, some of the railroads interviewed are also pre-blocking cars for movement on trains other than run-throughs to destinations on other railroads. This eliminates the reclassifying of such cars at intermediate terminals, which reduces operating costs and transit time.

The tabulation below discloses the number of blocks of cars pre-classified for destinations other than an interchange point by seven of the carriers participating in the study.

<u>Railroads</u>	<u>Daily Blocks Delivered to Connecting Railroads</u>
Chicago and North Western	9
ConRail	16
Norfolk and Western	15
Frisco	7
Seaboard Coast Line	11
Western Pacific	5
Union Pacific	9

The technique of pre-blocking is more pronounced in the East because of its large and widely spread industrial complex. One Eastern District railroad involved in the study prefers the use of pre-blocking in lieu of run-through trains because of the added flexibility it affords when working with erratic traffic volumes. Blocks can range from relatively few cars to a large number. Run-through trains, however, require a substantial number of cars for movement over a common route, if their operation is to be justified.

Pre-blocking as defined here leads to the same benefits as those realized from run-through trains, but on a lesser scale. Improved car utilization is realized, providing blocks are moved properly. Switching costs are decreased in consequence of reduced need for classification at congested major terminal areas. Also, since a reduced amount of switching is involved, possible savings can be achieved through decreased loss and damage.

IV. SERVICE STATUS: 1977

USER PERSPECTIVES

A total of 22 shippers of approximately 4.5 million annual carloads contributed to a synthesis of user perspectives on run-through trains. In a general sense the orientation of these firms covers the entire spectrum of U.S. rail freight movement, as the following table indicates:

<u>Line of Business</u>	<u>Number of Firms</u>
Fresh Produce	3
Packaged Food	3
Automobiles and Parts	2
Chemicals	2
General Merchandise	2
Grain	2
Industrial Products	2
Lumber	2
Coal	1
Malt Liquor	1
Steel (including coke)	1
Sugar	1

Seven of the interviewed shippers indicated they played an important role in the development of run-through trains; by their count, these firms were collectively responsible for the inauguration of more than 40 such operations. These shippers fostered applications of the service by providing incentives to the railroads in the form of pledged traffic retention or increases, reduced switching requirements and improved equipment utilization (in the automobile industry it was found that fewer assigned cars were needed as a result of run-through train service).

Whether additional traffic gained by particular railroads represents a market share increase for the industry as a whole or simply intramodal diversion was an issue explored at length with shipper participants in the study. Twenty of the 22 shippers indicated that run-through train service acted primarily to divert traffic from railroads which did not provide this service to railroads which do. Prominent among commodities mentioned as sensitive to intramodal diversion were fresh vegetables and fruits moving from West Coast growing areas to East Coast markets. According to one shipper, the SP-UP-C&NW "Fresh from the West" run-through service diverted traffic of this type from the Burlington Northern (BN) and the Rock Island. Another fresh produce shipper reported that the Southern Pacific became interested in providing additional run-through service when the Santa Fe initiated faster eastbound service.

By contrast with the emphasis placed by most customers on the potential of run-through service for intra-railroad competition, eight of the 22 surveyed shippers indicate that run-through service in some instances could divert some traffic from other modes of transportation. These shippers, with the exception noted below, were careful to observe that rates, switching service, and car supply remain the principal criteria for mode selection, although run-through service is a factor given weight. The California fresh produce growers, by contrast, are greatly concerned with transit time: provided the railroads can maintain consistent expedited schedules from their production points to their markets, their traffic will move by rail as opposed to truck.

Route Selection

Shippers were asked to specify and rank not more than four of the major factors that, generally, govern their choice of routes in utilizing run-through train service. The results, from 21 shippers, were as follows:

<u>Route Determination Factors</u>	<u>Importance Ranking By No. of Firms</u>			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Service	10	5	4	0
Car supply	3	9	4	1
Rates	4	2	2	0
Dependability	1	1	0	0
Serving carriers	1	1	0	0
Favorable car utilization	1	1	0	0
Guaranteed schedules	1	0	0	0
Car assignments	1	0	0	0
Facile car tracing	0	1	0	0
Reduced lading damage	0	0	1	0
Railroad solicitation	0	0	1	0
Financial condition of the carrier	0	0	1	0

Not surprisingly, the table discloses that "service," encompassing both transit time and consistency of movement, is the most important factor to which shippers give weight in the route selection process. But of course "service" is a generic term which has different meanings to various shippers. Some elements of "service" such as

dependability, facile car tracing and car supply, were also important to some shippers, with the latter seemingly given almost equal weight with "service" itself. In any case, to the extent that the table is a guide to contemporary shipper perspectives, it appears that "service," i.e., speed and reliable transit times is more consequential to contemporary shippers than the rates or prices charged. Considering the posture of motor freight transport in American economic history this view should come as no surprise. It suggests that the favorable attitudes expressed by many shippers toward run-through trains reflect the fact that the differential vis-a-vis motor freight transport is narrower for such trains than for conventional railroad service. It would seem to identify motor carrier service standards at railroad prices as an attractive competitive alternative.

Two shippers gave weight to the obvious fact that serving carriers at origin and destination do have an influence on routing; both expressed their views with the qualification that such an advantage is no longer controlling, it must be bolstered by superior service, or else the option to short-haul the originating or terminating carrier is likely to be exercised. Lading damage was a routing factor for a general merchandise shipper, on the seemingly reasonable theory that reduced exposure to switching afforded by run-through trains will reduce lading damage. Other shippers agree with this theory but do not explicitly use it as a routing criterion. Aggressive solicitation by railroad sales personnel (for traffic generally, not just for run-through trains) was expressed by one shipper to be a factor which influenced routing. Carrier financial condition

was of concern to a major bulk grain shipper because of its influence on the ability or inability of carriers to honor freight loss and damage claims.

Run-Through Traffic Share

Seventeen of the 22 interviewed shippers, or about 77 percent, provided information on their total annual rail traffic, and seven of them also provided facts on the proportion of their cars moving in run-through train service, as shown in the following table:

ANNUAL RAIL TRAFFIC OF 17 SHIPPERS		
<u>Commodity</u>	<u>Annual Carloads</u>	<u>Run-Through Attribution</u> (percent)
Automobiles and parts	2,750,000	20%
Steel (including coke)	1,000,000	5
General merchandise	187,000	20
Grain products	160,000	unavailable
Lumber	100,000	unavailable
Packaged food	95,000	unavailable
Fresh produce	87,900	11
Chemicals	44,000	unavailable
Bulk grain	18,000	90
Sugar	11,000	unavailable
Industrial supplies	9,000	unavailable

Of the seven shippers which provided their run-through traffic data, two are manufacturers of automobile and parts, two move fresh produce and the others ship general merchandise, grain and steel, respectively.

With the exception of bulk grain, the relatively low percentage of traffic attributed to run-through train service indicates that the unexploited potential may be substantial. No doubt to some extent it also indicates that many shippers are unaware as to how much of their traffic is moving in run-through train service.

The table on the preceeding page also shows that of the surveyed shippers the automobile manufacturers are by far the largest users of run-through train service in absolute terms; their percentage use of the service is unquestionably understated, as only one of the automobile manufacturers provided the percentage of its traffic in run-through train service. A high percentage of run-through train use for bulk grain carriage is disclosed by the table, primarily as a result of the unit grain train concept. These trains are not usually scheduled movements and run in heavy volume during harvest time and light volume at other times. The table confirms prior reference to the fact that significant proportions of transcontinental fresh produce moves in run-through train service (the balance moving mostly by truck) because of the need for expedited service. A portion of the general merchandise shipments also move in run-through trains because such traffic is, like the fresh produce, directed toward the most expeditious route available; it consequently moves on run-through train service where available.

Service Improvement

Shippers were asked to evaluate run-through train service, based on what they considered its strengths and deficiencies. Not all the shippers interviewed responded to this suggestion, and some who did had more than one answer; however, as far as the strengths are concerned, almost all the responding shippers selected improved transit time as the leading attribute of the service. It was, for example, pointed out that fresh produce shipments moving from the West Coast require 4th morning delivery in Chicago and 6th morning delivery in New York in order effectively to compete with trucks. These schedules can be currently met only with the use of run-through train service. Transit time reduction attributed by shippers to run-through train service ranged from 1 to 7 days, depending on length of haul. One shipper specifically mentioned a 4 to 6 day transit time improvement with respect to transcontinental shipments from the Pacific Northwest to East Coast markets.

Two shippers listed less yard terminal time as the most important advantage and one shipper, primarily of transcontinental piggyback, expressed that high speed fuel efficient operation was, in his opinion, the paramount strength of the service.

Service Defects

Notwithstanding its perceived advantages, run-through service as presently operated remains far from perfect, in the typical shipper's view, as shown below:

<u>Deficiencies</u>	<u>No. Shippers Citing</u>
Excessive terminal time	6
Inconsistent transit time	4
Not enough run-through trains	3
Insufficient publicity	2
Shortage of power	1
Not monitored/no follow-through	1
Inadequate car availability	1
Shortage of TOFC flat cars	1
Concept too tardily introduced	1

Although some of the responses appear to be more closely related to the characteristics of rail service in general rather than to run-through service specifically, inspection of the table indicates that run-through train service has evidently done little to resolve problems with origin/destination terminal delay time. The theory behind the run-through train is to eliminate intermediate terminal time, providing expedited service between origin and destination. Delay at origin and destination is a separate and serious matter, for which other solutions must be sought.

By contrast, inconsistent transit time is an asserted defect directly related to run-through train service, and hence more pertinent to the context of this study. It is one thing to stress the total absence of a needed service improvement, and quite another to point up, as this criticism does, an apparent inadequacy of supervision, monitoring or control of a service already installed and functioning. Judging from shipper responses, approximately 20 percent of those surveyed indicated improvement is needed in this area. Shippers who listed as deficiencies "not enough run-through trains" and that the "service is not publicized enough" concur in the success and desirability of the service, but submit that it needs to be expanded in application and marketed more affirmatively and explicitly. One traffic executive indicated that sales representatives of a carrier operating a large number of run-through trains never once mentioned to him the availability, much less the advantages, of such service. The "not monitored/no follow-through" comment falls into the same category.

The remaining weaknesses shown in the table are more or less related to railroad service in general rather than specifically attributable to run-through service. The tardiness with which the run-through concept was adopted by the railroads was stressed by an industrial distribution officer who, over the past five years, asserted that he had completely reversed his company's modal split from its prior division of 80 percent rail, 20 percent truck. For unexpressed reasons he took the position that it was too late to completely reverse his company's distribution policy, which was changed in the first instance because of inconsistent,

unreliable railroad service.

When asked if run-through train service reduces lading damage, seven shipper executives responded unqualifiedly in the affirmative with one automobile shipper reporting an estimated 30 percent reduction in the value of lading damage. Thirteen traffic officials also reported their assumption of a reduction in lading damage but lacked data to support their presumptions. Three shippers have experienced no loss and damage reduction from run-through train use (the question was not posed to two bulk commodity shippers).

Suggested Improvements

Officials at rail user firms were asked to provide suggestions for improvement in the run-through train service as it is currently operated. The results were as follows:

<u>Suggested Improvements</u>	<u>Number of Responses</u>
Expanded scope and/or frequency	8
More publicity	8
Reduced terminal time	4
Accelerated transit time	1
Improved inter-railroad coordination	1
More mergers/fewer railroads	1
Schedule flexibility	1

These suggested improvements, as is appropriate, more or less mirror the service deficiencies listed in the previous table. Shippers feel that not enough run-through service is offered to meet their shipping needs and consequently want the service expanded. By the same token, the service needs more publicity if shippers are to be able to schedule their production so as to use it.

Terminal time reduction was again highlighted as a needed major improvement, from a shipper perspective. It seems not unreasonable to conclude that shippers believe that the improved transit time attained by run-through trains is wasted if cars are delayed excessively at origin/destination terminals. Fresh produce shippers want improved transit time on the initial segment of the West Coast to East Coast fresh produce runs in order to ensure on-time delivery to their markets. Significantly, one customer official suggested that the railroads would be well advised to seek a higher degree of coordination in their run-through train activities, while another advocated more railroad mergers, reducing the number of separate railroads and thereby decreasing or altogether eliminating the need for inter-railroad coordination. One shipper suggested line-haul schedule acceleration to provide for a later cut-off time at loading points.

It is patent that, notwithstanding these helpful criticisms, economic run-through train service cannot be tailor-made for each and every shipper, with the exception of solid train blocks or unit trains. Shippers with large fleets of private cars are interested in run-

through trains as a means of improving their car utilization. Automobile manufacturers, using railroad-owned equipment, are likewise concerned with car utilization since their production schedules are tightly coordinated with railroad auto part shipments. Fertilizer shippers, who appreciate the improved transit time from run-through trains, nonetheless want to enjoy the flexibility of diverting loaded shipments prior to arrival at billed destinations. Fresh produce shippers, possibly the most enthusiastic about the run-through concept, nevertheless insist on early morning arrivals at destination as essential to their marketing strategy, as a one hour interchange delay could (and has) cause a grocery shelf placement delay of 24 hours.

For the most part, the industries surveyed indicated a willingness to compromise with other shipper's needs in order to provide the needed flexibility to foster run-through train service. Shippers as a whole are looking for more run-through trains, more advertising of the service which is offered, and more consistency in maintaining schedules, as well as terminal time reduction.

Pre-Blocking

Shippers were also asked to provide an evaluation of railroad pre-blocking techniques as complementary to and reinforcing the advantages of run-through trains. Nineteen of the twenty-two shippers surveyed indicated

that, in their experience, pre-blocking did provide a service similar to but not as effective as run-through train service. Three shippers expressed their belief that pre-blocking is a technique designed to reduce congestion at terminals mainly for the benefit of the railroads and not necessarily for shipper benefit. As a group, the shippers interviewed evaluated pre-blocking as associated with reduced switching, damage, yard congestion, and faster service; all of these benefits were, however, realized to a lesser extent with pre-blocking than with run-through train service.

The main concern of all rail customers, price aside, is to route their shipments over a route with superior service, regardless of whether the traffic moves in run-through train service, is pre-blocked, enjoys both advantages, or, in some cases neither. A shipper perceives no advantage in specifying run-through train service, if this moves his shipments from A to B in one line-haul day and requires five terminal days to spot his shipment at C. It was stressed that in some cases further checking of routes may disclose regularly scheduled train service between A and C which provides a reduced overall transit time.

Specific Commodity Implications

As mentioned, a relatively small number of shippers seem to have played a major role in initiating over 40 run-through trains. The traffic of their firms largely consists of specific commodities moving in sufficient volume to warrant trainload shipments; namely, autos and auto parts, coke, coal, steel, fresh produce, soda ash, chemicals and grain. A substantial part of such traffic moves in some variant of unit train service, almost

always with run-through characteristics. Examples of such traffic are set out in Table 2.

The information arrayed in Table 2 was furnished by only nine railroad customers. This suggests that specific commodity production and marketing characteristics have tremendous influence in both the development and use of run-through train service. The table also implies that, at present, use of run-through train service is, in every territory, concentrated in four commodity groups. Coke and coal provide the fuel for steel production which in turn is used for the manufacture of autos and auto parts.

V. BACKGROUND

History

"Fast freight lines" or "colored lines" (so called because of their distinctively colored cars) are frequently mentioned in accounts of nineteenth century railroading in the United States. They were intended to attract and facilitate interline freight traffic by expeditious movement in single or multi-car lots; there is no indication that solid freight trains were interchanged between railroads. A typical description of this early precursor of run-through trains is as follows:

"To...expedite the movement of through freight, very many so-called fast freight lines exist in this country, as, for example, the Traders' Despatch, the Star Union, the Merchants Despatch Transportation Company, the Red, the White, the Blue, the National Despatch, etc. Some of these lines are simply cooperative lines, owned by the various railway companies whose roads are operated in connection with one another. Their organization is simple. A number of companies organize a line, which they put in charge of a general manager. Each company will assign to the line a number of cars, the quota of each being in proportion to its miles of road. The general manager has control of the line cars. He has agents who solicit business and employees who watch the movement of his line cars, and report the same to him. He keeps close record of his business, and reports promptly to the transportation officer of any road in his line any neglect or delinquency he may discover. The earnings of the line and its expenses are all divided pro rata among the roads interested. Such a line is simply an organization to insure prompt service and secure competitive business, and the entire benefit goes to the railway companies.

Other lines are in the nature of corporations, being owned by stockholders and operating on a system of roads in accordance with some agreement or contract. Others, again, are organized for some special freight, and are owned wholly by firms or individuals, such as the various dressed-beef lines and some lines of live-stock cars. These are put in service simply for the mileage received for their use, and in many cases the railway companies have no interest in them whatever." 6/

The persistence of "fast freight lines" into the present century is confirmed by the tabulation of 55 such lines, reproduced from the December 1908 issue of The Official Railway Equipment Register in Appendix Two. The Annual Report Form R-1 filed by each Class I railroad with the ICC, still provides in Schedule 320 for a report of traffic expenses associated with "fast freight lines." On the other hand, Loree's classic Railroad Freight Transportation, published in 1922, has no entry on such lines in its index and apparently makes no mention of them. Although Loree deplored the delays experienced in interchange, his book did not anticipate run-through trains.

Advertised interline trains existed at least as long ago as the nineteen-forties although the frequency with which they avoided yarding at interchange points is uncertain. The existence of large yards at rural junctions like Maybrook, New York, implies classification for interchange. However, old schedules of Southern Pacific-Rock Island service through Tucumcari, New Mexico, allowed some trains no yard time at all.

6/ Cooley, Thomas M., et al., "The American Railway," New York, Charles Scribner's Sons, 1893, pp. 287-8.

The consistent operation of run-through trains, with explicit avoidance of switching operations normally involving two yard engine crews as well as other classification routines, has been a development of the last 15 years or so, concurrent with the practical feasibility of pooling locomotive units. Although locomotive and caboose pooling are not essential to through train operation, their use obviously represents a more refined application of the run-through technique. Although rare, there have been some instances of crews on run-through trains operating from one railroad onto another, such as Reading crews working on Jersey Central, and vice versa through Bound Brook Junction, New Jersey, prior to the absorption of these two railroads by ConRail in 1976.

Awareness by the railroad industry that run-through operations were a decided advance over prior operational methods seems to have emerged gradually, inhibited perhaps by a perception of competitive advantage from non-disclosure on the part of some railroads. In any case, the first organized publicity given to run-through trains appears to have been in reaction to an extensive recitation of shipper complaints which emerged on the record in Ex Parte 265, Increased Freight Rates, 1970, in which the Commission "...invited all parties to submit evidence of deficiencies or inadequacies in railroad service, together with such recommendations as they wished to make as to how such conditions might be corrected." ^{7/}

By its joint order of March 4, 1971, in that proceeding and in Ex Parte 267, Increased Freight Rates, 1971, the Commission found:

^{7/} 339 I.C.C. 125, 136.

A number of protestants have called attention to inadequacies in service, including delays in movement of loaded cars, inability to provide empty cars when ordered, erratic delivery, failure to meet schedules, and provision of unsatisfactory cars. It is contended that railroad net revenues would generally be improved, and the need for additional gross revenues substantially reduced, by more effective cost control and service improvements. In effect, these parties challenge the economy and efficiency of railroad management which, under section 15a(2), are the factors required to be considered in this case...

The greatest volume of complaint of service deficiency is with respect to failure to meet schedules, terminal delays, erratic delivery, bunching of deliveries, and placing of cars unfit for use. The respondents unanimously signify their recognition of a need for improvement in their services and a desire to accomplish such improvement.

Necessarily, variation will occur in the quality of management between the many railroads serving the commerce of the United States. To an appreciable degree, greater efficiencies depend upon the ability of management to invest in modern equipment. Our review of that data which furnishes an indication of economy and efficiency warrants the conclusion that limitation of expenditures has become an inevitable consequence of limited funds, and that this forced economy has, if anything, contributed to service problems and impeded service improvement. Failure to provide such service is a primary contributory factor to the loss of traffic, particularly high grade traffic, and of the inability to attract increased volume so necessary to railroad operations.

The respondents agree, in general, that rail service can and should be improved. They did not attempt to trace the history of each of the service deficiencies reported in evidence of protesting parties to seek explanations therefor but have pointed out that some, at least, involve conditions over which they have had no control, such as severe weather conditions, seasonal crop maturities, et cetera. We think it reasonable to conclude that some portion of the reported deficiencies did result from conditions beyond the control of the respondents. We also find merit in their contention that the evidence fails to reflect that portion of service which was efficient and satisfactory to shippers. A review of the evidence as submitted, however, reveals certain areas wherein appreciable improvement in service is required. In particular, we have reference to terminal delays, interchange delays, erratic delivery, and deliveries not reasonably timed or spaced. In many instances we believe that shippers would accept longer

transit times provided a consistent delivery schedule could be maintained. We conclude that in these areas of service the respondents have need for more effective control over operating practices in order to meet the standard of adequate and efficient service required under section 15(a) of the Act.

The protestants have suggested a number of actions which we might take to obtain improvements in service, such as requiring filed schedules with penalties for failures, sundry penalties for various other types of deficiencies, earmarking of portions of the increase for specific purposes, et cetera. Some suggestions have already been the subject of carrier action. Some, such as car identification and communication systems, require the additional capital investments which the respondents seek to be able to make.

We conclude that respondents will be required to institute promptly those measures necessary to correct deficiencies of the type mentioned above. Thus, the respondents shall report to the Commission, Bureau of Operations, no later than July 1, 1971, and on or before the first day of each third month thereafter (i.e. October 1, 1971, January 1, 1972, et cetera) until further order of the Commission, the corrective actions undertaken. Disposition of the question of sanctions related to particular deficiencies will be held in abeyance pending examination of the results of corrective measures taken by the carriers. In light of these reports, and any other relevant information which may develop in pending proceedings (excluding Ex Parte No. 270, should "service" be made an issue therein), it is our intention to pursue a continuing investigation of this problem and to take appropriate action. In that connection, relevant evidence submitted in Ex Parte Nos. 265 and 267 will be considered a part of the continuing record in this area. 8/

AAR Quarterly Service Improvement Reports to the ICC

Responsive to the Commission's order, the measures instituted to correct service deficiencies have been reported to it, by the Association of American Railroads (AAR) on behalf of the carriers, at quarterly intervals beginning July 1, 1971. Among the foremost of such measures has been the institution of run-through trains.

8/ 339 I.C.C. 137, 155-6.

In the initial AAR report of July 1, 1971, run-through trains are described as trains that have cars pre-blocked and delivered as a unit to a connecting carrier, usually with motive power and in most cases with cabooses. The report suggests that bypassing interchange yards eliminates the reclassification of cars at these yards, which reduces terminal and transit time and improves car utilization. In consequence, reduced congestion in the bypassed terminals also results in improved service for other traffic. The following examples shown in the report indicate time saved at gateway points with run-through train operations:

<u>Interlining Railroads</u>	<u>Interchange Point</u>	<u>Hours Saved</u>
IC-SCL	Birmingham, Alabama	12
MILW-UP	Council Bluffs, Iowa	24
B&O-SSW	St. Louis, Missouri	42

It was also reported that pre-blocking of cars for movement on other than run-through trains had greatly expanded during the previous year, from which advantages similar to those of run-through trains were realized.

The report of July 1, 1971 states that its tabulation of run-through trains is not comprehensive, since a number of railroads did not adequately identify run-through operations. In subsequent reports, the installation of additional run-through train operations has been noted, together with arrangements for pre-blocking cars that are handled on other than run-through trains.

Tables 3 and 4 provide a chronology of run-through trains and pre-blocking arrangements, respectively, as these have been identified in successive AAR service improvement reports. Some of the run-through operations as well as some of the pre-blocking arrangements reported by the AAR may have subsequently been discontinued due to insufficient volume or operating problems.

Operations shown in Table 3 over such lines as the Penn Central (PC) and Alton & Southern (AL&S) with interchange at Exermont, Illinois and PC and the Long Island (LI) with interchange at New York, New York, could be more precisely described as direct pre-classified interchange rather than as run-through operations, since in each example, one of the participants is essentially a terminal, not line-haul carrier. The table also indicates that run-through trains are in some cases operated over terminal railroad or joint facility bridge carriers such as the AL&S and the Terminal Railroad Association of St. Louis (TRRA). In many such cases, train operation over the involved terminal trackage is by the involved line-haul carrier(s).

It can be noted in Table 3 that each run-through train reported as operating on July 1, 1971 involved only two carriers. One reason for this may be that an operating agreement can be more readily consummated between two railroads than between three or more railroads. It is possible, however, that the operation of some run-through trains had been initiated and discontinued prior to July 1, 1971. The AAR reported the first run-through train operated by three railroads on

October 1, 1971, the first by four railroads on January 1, 1973, and the first by five railroads on January 1, 1974 (including the Reading and Lehigh Valley which have since been incorporated into ConRail).

Table 3 also shows that there is nothing inherent in run-through train techniques which limits their application exclusively to domestic operations. This is important since traffic destined to or received from U.S. points amounts to about one-quarter of all Canadian carloads. The table notes that the AAR reported a run-through train operated by the Canadian Pacific (CP) and Chesapeake & Ohio (C&O) on October 1, 1974 and another operated by the CN, Central of Vermont (CV), Boston & Maine (B&M) and PC on April 1, 1975. No run-through trains originating or terminating in Mexico were reported.

The geographic scope of points reached and lines served by the 274 ^{9/} run-through trains shown in Table 3 (which include operations within and between every traffic territory of the U.S. as well as between the U.S. and Canada), indicates that the run-through concept has (1) contributed to an erosion of the interterritorial operating barriers which have traditionally inhibited long-haul service improvement by U.S. railroads, and (2) is not limited to operations involving only two railroads but is feasible for multiple interchange operations as well. Further, the fact that additional run-through trains were reported by the AAR in each

^{9/} Assumes all run-through trains operate in two directions, which may not be the fact in every case.

quarter from July 1, 1971 through October 1, 1976 suggests that the railroads may not, by the latter date, have reached the margin of cost-efficient run-through operations.

With Table 4 showing only 45 arrangements for pre-blocking of cars on other than run-through trains, one might possibly conclude that this concept, instituted many years ago, is not widespread and hence not very successful. Such pre-blocking arrangements are in fact far more extensive than Table 4 would indicate, since the AAR has not reported the extensive pre-blocking arrangements that were in effect between various railroads as of July 1, 1971, but only those that were subsequently instituted as further efforts at service improvement. Table 4 must be evaluated also with the knowledge that the growth in the number of run-through trains, on which all cars are blocked, has been accompanied by a reduction in the number of other trains on which or for which cars may be pre-blocked. There is a multiplicity of evidence to indicate that the extent of pre-blocking which appears in Table 4 is only the tip of the iceberg. The fact is that the pre-blocking concept has been extensively adopted, on the theory, supported by evidence adverted to herein, that pre-blocking is effective in improving service and reducing the combined operating costs of the railroads involved.

Current Publicity

Improvements in the railroads' competitive position and increases in their modal traffic share rest to an extraordinary degree on improved service (particularly enhanced consistency of service). This is supported by a report on a survey of shippers appearing in the November 1974 issue of Modern Railroads, which stated that "More improvements in service and service reliability must be made -- short range through better operating techniques, less yarding and more run-through trains...."

Considering the perilous financial situation of many railroads, and their correspondingly great need to attract business, surprisingly few of them identify and publish schedules of run-through trains separately from other freight schedules in The Official Railway Guide (Guide). A review of the March-April 1977 issue of the Guide revealed that such schedules were published only by the following railroads:

Atchison, Topeka & Santa Fe

Chessie

Chicago & North Western

Illinois Central Gulf

Louisville & Nashville

Norfolk & Western

St. Louis - San Francisco

Southern

Many other railroads are operating run-through trains, which in some cases are not identified as such in the Guide, and in other cases are altogether omitted. The SP, however, although not using the Guide for this purpose, does advertise run-through trains in trade magazines. It seems obvious that if run-through trains were explicitly identified as such and their schedules published separately in the Guide, it could stimulate shipper attention and help to foster traffic enhancement. The reluctance of some railroads to publicize run-through service may be based on the premise that publicity would create a demand from shippers, particularly small shippers, for such service that would be difficult or impossible to accommodate. That the railroad industry has no monolithic service policy is confirmed by the practice of some roads in shielding their run-through trains from public view, while others go so far as to publicize such operations in their annual shareholder reports or other company publications, excerpts from some of which are included in Appendix Three.

TABLE 1

ESTIMATED RUN-THROUGH INTERCHANGE TRAFFIC AT 46 TERMINAL AREAS

Terminal Area	Railroad	Run-Through Trains	
		Estimated Avg. Cars/Day in Run-Thru Interchange	Run-Thru as Est. % of Total Avg. Cars/Day Interchanged
Atlanta, GA	SCL	240	10%
Barr, IL	C&NW	60	90
Beiber, CA	WP	345	100
Birmingham, AL	SCL	337	80
	SLSF	128	33
Bostick, NC	SCL	360	25
Buffalo, NY	N&W	392	50
Camden, MO	N&W	160	100
Cape Girardeau, MO	SLSF	85	99
Centralia, IL	SOU	221	95
Chattahoochee, FL	SCL	190	45
Cherry Run, PA	Chessie	466	30
Chicago, IL	C&NW	219	14
Cincinnati, OH	Chessie	177	35
	CR	520	30
	SOU	427	27
Connellsville, PA	N&W	230	100
Council Bluffs, IA	C&NW	587	60
	UP	601	90
Detroit, MI	Chessie	69	25
E. St. Louis, IL	Chessie	73	25
	CR	304	22
Elkhorn City, KY	Chessie	188	100
El Paso, TX	MP	NA	50
	SP	55	20
Fremont, NE	C&NW	1,215	99
	UP	875	97
Fort Worth, TX	SP	220	20
Grand Island, NE	UP	415	100
Hagerstown, MD	Chessie	104	20
Kansas City, MO	N&W	482	75
	SLSF	230	50
	UP	1,034	75
Memphis, TN	SOU	934	85
	SP	298	50

TABLE 1

ESTIMATED RUN-THROUGH INTERCHANGE TRAFFIC AT 46 TERMINAL AREAS

<u>Terminal Area</u>	<u>Railroad</u>	<u>Run-Through Trains</u>	
		<u>Estimated Avg. Cars/Day in Run-Thru Interchange</u>	<u>Run-Thru as Est. % of Total Avg. Cars/Day Interchanged</u>
Mitchell, IL	N&W	395	100%
Montgomery, AL	SCL	265	15
Mount Vernon, IL	SOU	100	95
New Orleans, LA	SOU	434	45
	SP	530	30
Ogden, UT	SP	1,388	100
	UP	401	100
Park Jct., PA	Chessie	190	45
Portland, OR	SP	285	70
Powell, ONT, Canada	Chessie	53	25
Provo, UT	UP	380	100
Richmond, VA	SCL	660	50
Rotterdam Jct., NY	CR	257	68
St. Louis, MO	SLSF	100	4
	SP	1,175	70
Salt Lake City, UT	UP	260	98
	WP	250	30
Spartanburg, SC	SCL	240	50
Streator, IL	CR	344	97
Sweetwater, TX	MP	NA	95
Toledo, OH	CR	264	46
Tucumcari, NM	SP	450	100
Virden, IL	C&NW	110	90
Waynoka, OK	SLSF	160	50
Winton Jct., WY	UP	220	100

Source: Survey of 11 Railroads.

TABLE 2

VOLUME MOVEMENTS ON RUN-THROUGH TRAINS
BY COMMODITY AND ROUTE, SPRING 1977

<u>Commodity</u>	<u>Origin</u>	<u>Destination</u>	<u>Route</u>
Autos and auto parts	Chicago IL	Arlington IL	C&EI-MP
Autos and auto parts	Chicago IL	Oakland CA	RI-UP-SP
Autos and auto parts	Detroit MI	Chicago IL	DT&I-N&W
Autos and auto parts	Detroit MI	Louisville KY	DT&I-L&N
Autos and auto parts	Detroit MI	Minneapolis MN	DT&I-N&W-MILW
Autos and auto parts	Detroit MI	San Francisco CA	DT&I-N&W-MP- D&RGW-WP <u>1/</u>
Autos and auto parts	Indianapolis IN	Pontiac MI	CR-GTW
Autos and auto parts	Toledo OH	Atlanta GA	B&O-SOU
Coke	Clairton PA	Fairless PA	URR-CR
Coke	Clairton PA	Cleveland OH	URR-B&LE-B&O
Coke	Clairton PA	So. Chicago IL	URR-B&LE-B&O-EJ&E
Coke	Clairton PA	Youngstown OH	URR-B&LE-B&O
Coke	Duluth MN	Chicago IL	DM&IR-C&NW-EJ&E
Coke	Fairfield AL	Chicago IL	BS-L&N-EJ&E
Coke	Lorain OH	Cleveland OH	LT-B&O-N&SS

1/ Also use other routes at different times during the year depending on which railroads have special cars assigned.

TABLE 2

VOLUME MOVEMENTS ON RUN-THROUGH TRAINS
BY COMMODITY AND ROUTE, SPRING 1977
 (continued)

<u>Commodity</u>	<u>Origin</u>	<u>Destination</u>	<u>Route</u>
Coal	Blacksville WV	Monroe MI	MKC-CR
Coal	Champion PA	Ashtabula OH	MTR-CR
Coal	Egypt Valley OH	W. Olive MI	B&O-C&O
Coal	Fairmont WV	Concord NH	MKC-P&LE-CR-B&M
Coal	Lynch KY	Gary IN	L&N-EJ&E
Steel	East Chicago IN	Indianapolis IN	EJ&E-CR
Steel	East Chicago IN	Marion OH	EJ&E-CR
Steel	Gary IN	Indianapolis IN	EJ&E-CR
Steel	Gary IN	Oak Creek WI	EJ&E-MILW
Fresh Produce	Bradenton FL	Oak Island NJ	SCL-RF&P-CR
Fresh Produce	Salinas CA	Chicago IL	SP-UP-C&NW
Soda Ash	Various origins in Wyoming	Various destinations in East and South	Various routes via Chicago or Memphis
Chemicals	Baytown TX	Chicago IL	MP-C&EI
Grain	Various origins in the Midwest	Great Lakes and Gulf Ports	Various combinations

Source: Survey of 11 Railroads.

TABLE 3

RUN-THROUGH TRAINS REPORTED TO THE ICC BY THE AAR

<u>Report Date</u>	<u>Participating Railroads</u>	<u>Interchange Point(s)</u>
07-01-71	B&O-SOU	Cincinnati OH
	B&O-SSW	E. St. Louis IL
	BN-L&N	Woodlawn IL
	BN-SOU	Centralia IL
	BN-WP	Bieber CA
	IC-SCL	Birmingham AL
	L&N-MP	Memphis TN
	MP-C&EI	St. Louis MO
	N&W-AT&SF	Camden MO
	PC-AT&SF	Streator IL
	PC-BN	Chicago IL
	PC-C&NW	Chicago IL
	PC-DT&I	Toledo OH
	PC-L&N	Cincinnati OH
	PC-LI	New York NY
	PC-MILW	Chicago IL
	PC-MP	E. St. Louis IL
	PC-SOO	Chicago IL
	PC-SOU	Cincinnati OH
	PC-SSW	E. St. Louis IL
	SCL-L&N-SP	Chattahoochee FL
		New Orleans LA
	SOO-RI	Inver Grove MN
	SP-D&RGW	Ogden UT
	SP-L&N	New Orleans LA
	SP-RI	Tucumcari NM
	SP-SOU	New Orleans LA
	SP-UP	Ogden UT
	SSW-L&N	Memphis TN
	SSW-SOU	Memphis TN
	UP-WP	Salt Lake City UT

TABLE 3
RUN-THROUGH TRAINS REPORTED TO THE ICC BY THE AAR
 (continued)

<u>Report Date</u>	<u>Participating Railroads</u>	<u>Interchange Point(s)</u>
10-01-71	BN-C&S-FW&D	Denver CO
		Sixela NM
	BN-WP	Bieber CA
	PC-AL&S	Exermont IL
	PC-LI	New York NY
	SCL-L&N	Atlanta GA
	SOU-RI-AT&SF	Memphis TN
01-01-72		Amarillo TX
	SP-N&W	E. St. Louis IL
	N&W-WM-RDG	Haggerstown MD
	SOU-MP	Shippensburg PA
04-01-72		Memphis TN
	BN-PC	Chicago IL
	C&NW-N&W	Chicago IL
	MP-AL&S-N&W	St. Louis MO
		Madison IL
	N&W-TRRA-MP	E. St. Louis IL
		St. Louis MO
	PC-DT&I	Toledo OH
	RI-UP	Council Bluffs IA
	SOU-MP	New Orleans LA
07-01-72	UP-C&NW	Fremont NE
	BN-SP	Portland OR
	IC-MP	E. St. Louis IL
	MP-L&N	Memphis TN
	N&W-LV	Buffalo NY
	PC-B&M	Rotterdam Jct. NY
	SCL-L&N-SP	Birmingham AL
		New Orleans LA
	SCL-SLSF	Birmingham AL
	SP-RI-MILW	Tucumcari NM
		Kansas City MO
	SP-UP	Portland OR
	UP-SLSF	Kansas City MO

TABLE 3

RUN-THROUGH TRAINS REPORTED TO THE ICC BY THE AAR
(continued)

<u>Report Date</u>	<u>Participating Railroads</u>	<u>Interchange Point(s)</u>
10-01-72	MP-UP PC-L&N-SCL	Kansas City MO Cincinnati OH Atlanta GA
	RDG-CNJ SCL-CC&O SP-UP-BN	Bound Brook NJ Spartanburg SC Ogden UT Grand Island NE
01-01-73	UP-WP WM-N&W	Salt Lake City UT Connellsville PA
	BN-RI-SP	Kansas City MO Tucumcari NM
	C&NW-AL&S C&NW-UP CNJ-RDG-B&O- SOU	Madison IL Fremont NE Bound Brook NJ Philadelphia PA Potomac Yard VA
	ICG-C&O	Chicago IL
	MP-L&N-SCL UP-SP	New Orleans LA Chattahoochee FL Portland OR
04-01-73	AT&SF-TP B&O-RDG C&NW-UP D&H-LV PC-RDG	Sweetwater TX Philadelphia PA Fremont NE Wilkes-Barre PA Harrisburg PA
	SCL-SLSF	Birmingham AL
07-01-73	C&NW-UP L&N-A&WP/WA- L&N L&N-CC&O-ACL	Fremont NE Atlanta GA Montgomery AL St. Paul VA Bostic NC
	L&N-PC L&N-WA	Cincinnati OH Montgomery AL
	N&W-AC&Y	Spencer OH

TABLE 3

RUN-THROUGH TRAINS REPORTED TO THE ICC BY THE AAR
(continued)

<u>Report Date</u>	<u>Participating Railroads</u>	<u>Interchange Point(s)</u>
10-01-73	AT&SF-SLSF N&W-AC&Y PC-D&H SCL-A&WP/WA- L&N UP-MILW	Waynoka OK Spencer OH Hudson PA Atlanta GA Montgomery AL Council Bluffs IA
01-01-74	B&O-RDG-LV- D&H-B&M D&RGW-SP D&RGW-WP GTW-C&EI ICG-AT&SF MP-UP SOU-RI SP-UP-C&NW PC	Philadelphia PA Bethlehem PA Ogden UT Salt Lake City UT Thornton Jct. IL Kansas City MO Kansas City MO Memphis TN Ogden UT Fremont NE Blue Island IL
04-01-74	C&NW-UP SP-TP	Fremont NE Sweetwater TX
07-01-74	C&NW-UP MP-UP WP-D&RGW-MP	Fremont NE Kansas City MO Salt Lake City UT Pueblo CO
10-01-74	AT&SF-EL AT&SF-N&W CP-C&O MP-D&RGW SLSF-UP UP-C&NW- EJ&E	Nerska IL Kansas City MO Detroit MI Pueblo CO Kansas City MO Fremont NE Chicago IL
01-01-75	MP-L&N MP-SOU	New Orleans LA Memphis TN

TABLE 3
RUN-THROUGH TRAINS REPORTED TO THE ICC BY THE AAR
 (continued)

<u>Report Date</u>	<u>Participating Railroads</u>	<u>Interchange Point(s)</u>
04-01-75	BN-EJ&E-ICG CP-CV-B&M-PC ICG-UP SOU-C&EI	Eola IL Richford VT Springfield MA White River Jct. VT Kansas City MO Mt. Vernon IL
07-01-75	BN-UP MKT-UP WM-RDG	Grand Island NE Kansas City MO Shippensburg PA
10-01-75	SOU-SLSF	Memphis TN
01-01-76	B&M-D&H-EL D&H-PC MP-SLSF PC-ICG SCL-N&W UP-WP	Binghamton NY Mechanicville NY Buttonwood PA Cape Girardeau MO Effingham IL Petersburg VA Salt Lake City UT
04-01-76	A&WP/WA-L&N BN-TP&W ICG-C&IM SCL-L&N UP-ICG-PC	Montgomery AL Bushnell IL Springfield IL Chattahoochee FL Chicago IL Council Bluffs IA
07-01-76	B&M-D&H-B&O B&M-D&H-N&W B&O-C&NW-UP CR-C&NW-UP MILW-C&NW N&W-D&H SCL-L&N SCL-L&N-SP	Mechanicville NY Philadelphia PA Buffalo NY Mechanicville NY Chicago IL Fremont NE Chicago IL Fremont NE Chicago IL Buffalo NY Atlanta GA Chattahoochee FL New Orleans LA

TABLE 3
RUN-THROUGH TRAINS REPORTED TO THE ICC BY THE AAR
(continued)

<u>Report Date</u>	<u>Participating Railroads</u>	<u>Interchange Point(s)</u>
10-01-76	SCL-L&N	Chattahoochee FL
01-01-77	(No additional trains reported.)	

Source: Company reports to AAR.

TABLE 4

ARRANGEMENTS FOR PRE-BLOCKING OF CARS ON OTHER THAN RUN-THROUGH TRAINS
 REPORTED TO THE ICC BY THE AAR

<u>Report Date</u>	<u>By</u>	<u>For</u>	<u>Block(s)</u>
01-01-72	IC	TRRA	SLSF
	IC	MP	MP-South;
	MP	IC	MP-West
	TRRA	IC	Chicago Chicago
07-01-72	DT&I	PC-Sou	Atlanta
	FW&D	SLSF	Chicago;
			Minneapolis
	MP	UP	N. Platte, NE
	N&W	WM	RDG
	SCL	IC	Chicago
10-01-72	SLSF	FW&D	Houston
	UP	MP	St. Louis, MO
04-01-73	PC	B&M	MEC
	SCL	L&N-SP	Houston
	SCL	L&N	Nashville
	WP	DRGW-MP	Kansas City
10-01-73	D&H	B&M	Maine
	ICG	SLSF-SCL	Waycross, GA
01-01-74	PC	B&M	Maine
01-01-74	MP	L&N	Atlanta
	UP	C&NW-PC	Selkirk, NY; Enola, PA

TABLE 4

ARRANGEMENTS FOR PRE-BLOCKING OF CARS ON OTHER THAN RUN-THROUGH TRAINS
REPORTED TO THE ICC BY AAR

(continued)

<u>Report Date</u>	<u>By</u>	<u>For</u>	<u>Block(s)</u>
04-01-74	BN PC PC SLSF SLSF	SLSF SLSF SLSF PC TRRA	Memphis; Tulsa Springfield, MO Springfield, MO Detroit BN, C&NW, ICG, N&W and PC.
	TRRA UP	SLSF MP	Memphis; Tulsa Little Rock; St. Louis
07-01-74	D&H PC	LV-B&O C&NW	Potomac Yard UP
	SOU SOU WP	SLSF-UP C&O D&RGW	N. Platte, NE Peru, IN MP
10-01-74	MP	C&O	Grand Rapids, MI
01-01-75	ICG SP	UP MP	N. Platte, NE Ft. Worth
	TRRA	PC	Indianapolis; Columbus, OH
01-01-76	WP	BN	Portland, OR; Vancouver, WA
04-01-76	L&N N&W	TRRA TRRA	N&W L&N

TABLE 4
ARRANGEMENTS FOR PRE-BLOCKING OF CARS ON OTHER THAN RUN-THROUGH TRAINS
REPORTED TO THE ICC BY THE AAR

(concluded)

<u>Report Date</u>	<u>By</u>	<u>For</u>	<u>Block(s)</u>
07-01-76	BRC	CR	Selkirk, NY; Conway, PA; Indianapolis; Columbus, OH; Elkhart, IN
	C&NW	C&O	Cincinnati; Detroit; Grand Rapids, MI
10-01-76	CR	B&M-CV-CN	Montreal
01-01-77	CR	L&N	Nashville

Source: Company reports to AAR.

APPENDIX ONE

Study Design

In order to carry out a study of this type with limited expenditure of time and resources, inquiries directed toward railroads and shippers must be selective, and be informed by trade knowledge. To this end, inquiry was directed toward the Association of American Railroads for assistance in obtaining direction for the railroad data gathering effort and to the National Industrial Traffic League, a major shipper's trade association, for assistance in obtaining shipper information. Concurrent with these inquiries, a literature search into the background and present status of run-through trains was also conducted.

The study as described above was arranged in tasks as follows:

1. Survey Design and Definitions
2. Literature Search
3. Trade Organization Research
- 4.A. Test Interviews with a sub-sample of Operating and Traffic Officers of Selected Railroads
- 4.B. Interviews with Operating and Traffic Officers of Additional Selected Railroads
5. Interviews with Traffic Officers of Selected Shippers
6. Organization, Analysis and Interpretation of Data

Survey Design and Definitions

This task involved the development of uniform definitions for run-through trains and pre-blocking techniques for the purpose of this study.

Meetings were held with officials from the Association of American Railroads and the Rail Services Planning Office to consider, among other things, what factors characterize run-through trains or pre-blocking techniques.

To assist in gathering data, a railroad interview guide was developed, together with work sheets for recording data for each run-through train on a particular railroad. Also, a shipper questionnaire was developed for obtaining shipper responses either by direct interview or by mail.

Assistance in the selection of railroads was provided by the Rail Services Planning Office and the Association of American Railroads. It was decided to limit the study to 11 railroads and, to the extent possible, provide for a representative geographical selection. Railroad participation was, of course, entirely voluntary, and carrier cooperation was solicited through the Operations and Maintenance Department of the AAR and the Rail Services Planning Office. The railroads which elected to participate are:

Chessie System (Chessie)

Chicago and North Western Transportation Company (C&NW)

Consolidated Rail Corporation (CR)

Missouri Pacific Railroad Company (MP)

Norfolk and Western Railway Company (N&W)

St. Louis-San Francisco Railway Co. (SLSF)

Seaboard Coast Line Railroad (SCL)
Southern Railway System (SOU)
Southern Pacific Transportation Company (SP)
Union Pacific Railroad (UP)
Western Pacific Railroad Company (WP)

It was decided to interview four of the selected railroads at the beginning of the project to gain experience to facilitate subsequent inquiries, give practical insights into the scope of operations to be studied and insure the availability of information. For these initial interviews, the AAR recommended the Chessie System, ConRail, Southern and Union Pacific.

Assistance in the selection of shippers for participation in the study was provided by the National Industrial Traffic (NIT) League. In addition to providing valuable insights for shipper participation, the NIT League published a notice in its weekly newsletter asking all interested members who wish to participate in the study to contact R.L. Banks & Associates, Inc. Also, the four initial railroads interviewed, as a result of their experience with users of run-through trains, suggested shippers for possible interviews.

Literature Search

Literature relevant to run-through trains and pre-blocking techniques were found in the transportation libraries of R.L. Banks & Associates, Inc., Association of American Railroads, and the Department of Trans-

portation. Materials included articles from trade and professional journals as well as quarterly reports filed by the AAR with the ICC as mandated by Ex Parte 265.

Trade Organization Research

This task consisted of contacting the AAR and the NIT League and requesting their assistance concerning the data gathering portion of the study.

The AAR, in addition to providing assistance as outlined above, provided guidance as to the data needed from the railroads and as to the appropriate officers to whom inquiries should be directed.

In addition to the run-through train article published in their newsletter, the NIT League provided valuable insight as to which shippers utilize run-through trains and rely on this type of service.

Interviews with Operating and Traffic Officers of Selected Railroads

Pre-printed forms were used to develop qualitative as well as quantitative data pertaining to each run-through train operating on the railroad being interviewed. Data requested included the following:

1. Description of the service provided including origin, destination, connecting railroad, junction point, and whether plans existed for an extension of this service.
2. Development of the train including factors prompting the service, special labor agreements, negotiations with connecting line, and whether the train was commodity or connection oriented.

3. Operation of the train including frequency, on-time performance, power and caboose pooling, maintenance problems, plus train size and blocking information.
4. Benefits realized from the service including increase in traffic, reduced switching costs, improved car and locomotive utilization, and the percent of traffic by-passing the normal interchange as a result of the run-through train.
5. Basic information on pre-blocking such as connecting railroad, blocking point, junction point and number blocks per day.

Railroad officials were advised during the interviews, that proprietary data and other data considered confidential would be treated as such and not released as public information.

In addition to the above inquiries, general information was sought as to the overall success or failure of run-through train service including any difficulties, obstacles or disappointments that have been experienced.

Interviews with Traffic Officers of Selected Shippers

Shipper comments and information were gathered largely through the use of a questionnaire which provided for inquiries as to the following:

1. Development of run-through trains including factors prompting development, negotiation with railroads, identification of present and planned use of run-through trains, and whether this service does, in fact, divert traffic from other railroads or other modes.
2. Use of the service; such as, factors that govern choice of routes, average number of cars shipped per year and percent involved in run-through trains; effect on shipping patterns, and run-through services that are oriented toward specific commodities.
3. Evaluation of the service including shippers perception as to the success or failure of run-through trains, strengths and weaknesses, reduction in lading damage, and suggestions for improvement in the service.
4. Use of pre-blocking as providing similar service to the run-through train and the effect of pre-blocking on shipping patterns.

In addition to the questionnaire responses, additional information was sought which may pertain to the shippers being interviewed but not covered by the questionnaire.

Organization, Analysis and Interpretation of Data

This task involved producing an organized body of information on run-through trains and to a more limited extent on pre-blocking. Railroad data received was interpreted and analyzed producing quantifiable data in the following areas:

1. Number of run-through trains involved from the sample drawn.
2. Number of the above trains involved in power pooling.
3. Methods used for balancing power and cabooses in pooling operations.
4. Average number of loads and empties on run-through trains, by commodity.
5. Average number of blocks on run-through trains by commodity.
6. Benefits realized as a result of the service including increases in traffic, reduced switching costs and improved car and locomotive utilization.
7. Percent of gateway interchange traffic involved in run-through trains by railroad and gateway.

Shipper data was quantified to the extent possible from the sample drawn in the following areas:

1. Number of trains instituted as a result of shipper initiative.
2. Ranked list of factors that generally govern choice of routes.
3. Average number of cars shipped and percent intended for movement in run-through service.
4. Ranked list of run-through trains that are oriented toward specific commodities.
5. Ranked list of strengths and weaknesses of the service.
6. Where reported, percent of reduction in lading damage.
7. Percent of traffic from sample that moves as pre-blocked traffic.

FAST FREIGHT LINES.

American Refrigerator Transit Co.
C. H. HOLMES, Gen. Manager.....St. Louis, Mo.
International & Great Northern
Missouri Pacific
St. Louis, Iron Mountain & Southern
St. Louis Southwestern
Texas & Pacific
Wabash
and connections. July, 1907.

Asheville Line Routes.

R. A. CAMPBELL, Manager, Chemical Bldg., St. Louis, Mo.
Chesapeake Steamship Co.
Chicago, Indianapolis & Louisville
Cincinnati, New Orleans & Texas Pacific
Clyde Line
Merchants & Miners Transportation Co.
Old Dominion Steamship Co.
Southern
Southern Railway (St. Louis-Louisville Lines)
and connections. January, 1908.

Atlantic Coast Despatch.

O. S. CAMPBELL, Manager.....Richmond, Va.
Atlantic Coast Line
Pennsylvania
and connections. August, 1908.

Blue Line.

CARL HOWE, Manager.....Buffalo, N. Y.
Boston & Albany
Boston & Maine
Canadian Pacific
Central R. R. of N. J.
Chicago & Alton
Chicago, Indiana & Southern
Chicago, Indianapolis & Louisville
Cincinnati, Hamilton & Dayton
Cleveland, Cincinnati, Chicago & St. Louis
Lake Erie & Western
Michigan Central
New York Central & Hudson River System
New York, New Haven & Hartford
Philadelphia & Reading
Rutland
Toledo, St. Louis & Western
Toronto, Hamilton & Buffalo
Wabash
and connections. October, 1908.

Blue Ridge Despatch.

R. H. VAUGHAN, Gen. Manager.....Cincinnati, O.
Central Railroad of New Jersey
Cleveland, Cincinnati, Chicago & St. Louis
Chesapeake & Ohio
Louisville & Nashville
New York, New Haven & Hartford
Norfolk & Western
Ohio Central Lines
Philadelphia & Reading
Southern (St. Louis-Louisville Lines)
Western Maryland
and connections. July, 1908.

Canada Southern Line.

CARL HOWE, Manager.....Buffalo, N. Y.
Chicago & Alton
Cincinnati, Hamilton & Dayton
Louisville & Nashville
Michigan Central
Pennsylvania
Toledo, St. Louis & Western
Toronto, Hamilton & Buffalo
and connections. October, 1908.

Canadian Pacific Despatch.

B. D. WEBBER, Gen. Manager.....Boston, Mass.
Boston & Maine
Canadian Pacific
Duluth, South Shore & Atlantic
Maine Central
Minneapolis, St. Paul & Sault Ste. Marie
St. Johnsbury & Lake Champlain
Wabash
October, 1901.

Central States Despatch.

T. H. NOONAN, Gen. Manager.....Cincinnati, O.
Baltimore & Ohio
Baltimore & Ohio Southwestern
Boston & Maine
Central New England
Central Railroad of New Jersey
Cleveland, Cincinnati, Chicago & St. Louis
Cleveland Terminal & Valley
Cumberland Valley
Illinois Central
Lohr & Hudson River
New York, New Haven & Hartford
Philadelphia & Reading
Pittsburgh & Western
Portland & Rochester
and connections. January, 1908.

Chicago, New York & Boston Refrigerator Co.
C. R. COOPER, Gen. Manager.....Chicago, Ill.

Grand Trunk Ry. System
West Shore
and connections. September, 1901.

Clyde-Charleston Fast Freight Line.

J. A. McNEILL, Mgr.....390 Broadway, New York, N. Y.

Atlanta & West Point
Clyde Line
Georgia
Nashville, Chattanooga & St. Louis
Southern
Western of Alabama
January, 1908.

Commercial Express Line.

ED. WILKS, Manager.....Buffalo, N. Y.

Ann Arbor
Boston & Maine
Central R. R. of New Jersey
Cincinnati, Hamilton & Dayton
Delaware & Hudson Co.
Erie
Grand Trunk
New York Central & Hudson River
New York, New Haven & Hartford
Philadelphia & Reading
Toledo, St. Louis & Western
and connections. April, 1907.

Continental Line.

T. H. NOONAN, Gen. Manager.....Cincinnati, O.

Baltimore & Ohio
Baltimore & Ohio Southwestern
Central Railroad of New Jersey
Chicago & Alton
Cincinnati, Hamilton & Dayton
Evansville & Terre Haute
Philadelphia & Reading.
October, 1901.

Cumberland Gap Despatch Routes.

A. BROADBENT, Manager.....Louisville, Ky.

Baltimore Steam Packet Co.
Clyde Steamship Co.
Louisville & Nashville R. R. Co.
Louisville, Henderson & St. Louis Ry.
Merchants & Miners Transportation Co.
Norfolk & Western Ry. Co.
Old Dominion Steamship Co.
Pittsburg, Cin., Chicago & St. Louis Ry.
January, 1908.

Eastern & Southern Despatch.

F. W. PARSONS, Manager.....Philadelphia, Pa.

Pennsylvania
Philadelphia & Reading
Southern
and connections. January, 1907.

Empire Line.

GEO. M. BALL, Manager.....Philadelphia, Pa.

Ann Arbor
Central R. R. of N. J.
Chicago & North-western
Chicago, Burlington & Quincy
Chicago Great Western
Chicago, Milwaukee & St. Paul
Chicago, Rock Island & Pacific
Cleveland, Cincinnati, Chicago & St. Louis
Cumberland Valley
Evansville & Terre Haute
Illinois Central
Iowa Central
Lake Erie & Western
Lake Shore & Michigan Southern
New York & Long Branch
New York, Philadelphia & Norfolk
Northern Central
Pennsylvania
Philadelphia & Reading
Philadelphia, Baltimore & Washington
Pere Marquette
Richmond, Fredericksburg & Potomac
Toledo, St. Louis & Western
Wabash
West Jersey & Seashore
June, 1908.

Erie Despatch.

W. R. CROW, Gen. Manager.....Chicago, Ill.

Boston & Maine
Central R. R. of New Jersey
Delaware & Hudson Co.
Erie
Lough Valley
New York, New Haven & Hartford
Philadelphia & Reading.
July, 1908.

Great Southern Despatch.

DR. LOS THOMAS, Manager.....Roanoke, Va.

Cumberland Valley
Norfolk & Western
Pennsylvania
Southern
and connections. April, 1908.

Grand Trunk Despatch.

(WEST SHORE & N. R. ROUTE.)

JAMES P. GAY, Manager.....Detroit, Mich.

Ann Arbor
Boston & Maine
Central Railroad of New Jersey
Chicago, Indiana & Southern
Cincinnati, Hamilton & Dayton
Cincinnati Northern
Detroit & Mackinac
Detroit & Toledo Shore Line
Detroit, Toledo & Ironton
Elgin, Joliet & Eastern
Grand Rapids & Indiana
Grand Trunk System
Maine Central
Manitowish & North Eastern
New York, New Haven & Hartford
Philadelphia & Reading
Southern Indiana
Toledo, St. Louis & Western
Vandalia Line
West Shore
All roads west of Chicago
January, 1908.

Green Line.

J. D. COUFFER, Agent.....Chicago, Ill.

Pittsburgh, Cincinnati, Chicago & St. Louis Ry.
"Pan Handle Route."
All roads south of the Ohio River.
April, 1908.

Interstate Despatch.

E. KASLER, Manager.....Buffalo, N. Y.

Bessemer & Lake Erie
Chicago & Alton
Chicago, Indiana & Southern
Cincinnati, Hamilton & Dayton
Erie
New York Central & Hudson River (Penn. Div.)
New York, Chicago & St. Louis
Philadelphia & Reading
and connections. January, 1907.

Jersey Central—Lake Shore Despatch.

CARL HOWE, Manager.....Buffalo, N. Y.

Central R. R. of N. J.
Chicago, Indiana & Southern
Cleveland, Cincinnati, Chicago & St. Louis
Lake Erie & Western
Lake Shore & Michigan Southern
New York Central & Hudson River (Penn. Div.)
Philadelphia & Reading.
October, 1908.

Jersey Central—Michigan Central Despatch.

CARL HOWE, Manager.....Buffalo, N. Y.

Central R. R. of N. J.
Chicago, Indiana & Southern
Cleveland, Cincinnati & St. Louis
Lake Erie & Western
Michigan Central
New York Central & Hudson River (Penn. Div.)
Philadelphia & Reading.
Toronto, Hamilton & Buffalo
and connections. October, 1908.

Jersey Central—Pere Marquette Line.

CARL HOWE, Manager.....Buffalo, N. Y.

Central R. R. of New Jersey
New York Central & Hudson River
Pere Marquette
Philadelphia & Reading
and connections. July, 1908.

FAST FREIGHT LINES—CONTINUED.

Kanawha Dispatch Routes.

THORNTON LEWIS, Manager.....Cincinnati, O.
 Atlantic Coast Line Railroad
 Chesapeake & Ohio Railway
 Cincinnati, Hamilton & Dayton Railway
 Cleveland, Cincinnati, Chicago & St. Louis Railway
 Clyde Steamship Co.
 Illinois Central Railroad
 Louisville & Nashville Railroad
 Louisville, Henderson & St. Louis Railway
 Merchants and Miners Transportation Co.
 Ohio Central Lines
 Old Dominion Steamship Co.
 Pittsburg, Cincinnati, Chicago & St. Louis Railway
 Seaboard Air Line Railway
 Southern Railway
 and connections. *January, 1908.*

Lackawanna-Grand Trunk Line.

IRA W. GANTT, Manager.....Chicago, Ill.

Ann Arbor
 Boston & Maine
 Central Railroad of New Jersey
 Cincinnati, Hamilton & Dayton
 Delaware & Hudson
 Delaware, Lackawanna & Western
 Grand Trunk
 New York, New Haven & Hartford
 Philadelphia & Reading
 Toledo, St. Louis & Western
 and connections. *July, 1908.*

Lackawanna Line.

H. J. GRAHAM, Manager.....Chicago, Ill.

Bessemer & Lake Erie
 Boston & Maine
 Central Railroad of New Jersey
 Chicago & Alton
 Chicago, Indiana & Southern
 Chicago, Indianapolis & Louisville
 Cincinnati, Hamilton & Dayton
 Cleveland, Cincinnati, Chicago & St. Louis
 Delaware & Hudson Co.
 Delaware, Lackawanna & Western
 Lake Erie & Western
 New York, Chicago & St. Louis
 Philadelphia & Reading
 Toledo, St. Louis & Western
 Wheeling & Lake Erie. *July, 1908.*

Lake Shore-Lackawanna Fast Freight Line.

J. H. CRAWFORD, Gen. Frt. Agt. 90 West Street, New York.

Boston & Maine
 Central R. R. of New Jersey
 Chicago & Alton
 Chicago, Indiana & Southern
 Cleveland, Cincinnati, Chicago & St. Louis
 Delaware & Hudson
 Delaware, Lackawanna & Western
 Dunkirk, Allegheny Valley & Pittsburgh
 Lake Erie & Western
 Lake Shore & Michigan Southern
 Peoria & Eastern
 Philadelphia & Reading
 Pittsburgh & Lake Erie
 Toledo, St. Louis & Western *October, 1907.*

Lake Shore-Lehigh Valley Route.

S. A. STONY, Manager.....Buffalo, N. Y.

Ann Arbor
 Boston & Maine
 Central R. R. of New Jersey
 Chicago, Indiana & Southern
 Cleveland, Cincinnati, Chicago & St. Louis
 Delaware & Hudson
 Dunkirk, Allegheny Valley & Pittsburgh
 Lake Erie, Alliance & Wheeling
 Lake Erie & Western
 Lake Shore & Michigan Southern
 Lehigh Valley
 Maine Central
 New York, New Haven & Hartford
 Philadelphia & Reading
 Pittsburg & Lake Erie
 Toledo, St. Louis & Western
 and connections. *March, 1907.*

Lehigh Valley Dispatch.

S. A. STONY, Manager.....Buffalo, N. Y.

Ann Arbor
 Boston & Maine
 Central R. R. of New Jersey
 Chicago & Alton
 Chicago, Indiana & Southern
 Cleveland, Cincinnati, Chicago & St. Louis
 Delaware & Hudson
 Lehigh Valley
 Maine Central
 Michigan Central
 New York, New Haven & Hartford
 Philadelphia & Reading
 Toledo, St. Louis & Western
 and connections. *March, 1907.*

Merchants Dispatch.

CARL HOWE, Manager.....Buffalo, N. Y.

Boston & Albany
 Boston & Maine
 Chicago & Alton
 Chicago, Indiana & Southern
 Cleveland, Cincinnati, Chicago & St. Louis
 Lake Erie & Western
 Lake Shore & Michigan Southern
 Michigan Central
 New York Central & Hudson River
 Philadelphia & Reading
 Pittsburg & Lake Erie
 Rutland
 Toledo, St. Louis & Western
 Toronto, Hamilton & Buffalo
 and with Railroads connecting therewith. *Oct., 1908.*

Merchants Dispatch—Dairy Line.

CARL HOWE, Manager.....Buffalo, N. Y.

Boston & Albany
 Boston & Maine
 Chicago, Indiana & Southern
 Cleveland, Cincinnati, Chicago & St. Louis
 Lake Erie & Western
 Lake Shore & Michigan Southern
 Michigan Central
 New York Central & Hudson River
 Philadelphia & Reading
 and with railroads connecting therewith. *Oct., 1908.*

Merchants Dispatch—Pere Marquette Line.

CARL HOWE, Manager.....Buffalo, N. Y.

Boston & Albany
 Boston & Maine
 New York Central & Hudson River
 Pere Marquette
 Philadelphia & Reading
 and connections. *July, 1908.*

Michigan Central-Lackawanna Fast Freight Line

J. H. CRAWFORD, Gen. Frt. Agt. 90 West Street, New York.

Boston & Maine
 Central R. R. of New Jersey
 Chicago & Alton
 Chicago, Indiana & Southern
 Chicago, Indianapolis & Louisville
 Cincinnati, Hamilton & Dayton
 Delaware & Hudson
 Delaware, Lackawanna & Western
 Detroit, Toledo & Milwaukee
 Michigan Central
 Philadelphia & Reading
 Toledo, St. Louis & Western *October, 1907.*

Milwaukee & Michigan Line.

(N. V. C. & H. R. Route.)
 JAMES P. GAY, Manager.....Detroit, Mich.

Boston & Albany
 Boston & Maine
 Central Railroad of New Jersey
 Chicago & Northwestern
 Chicago, Milwaukee & St. Paul
 Chicago, St. Paul, Minneapolis & Omaha
 Grand Trunk Ry. System (lines west of Detroit and St. Clair Rivers)
 Maine Central
 New York Central & Hudson River
 New York, New Haven & Hartford
 Northern Central
 Philadelphia & Reading
 Wisconsin Central. *October, 1907.*

National Dispatch Line.

M. D. GREENE, Treas. and Supt. St. Albans, Vt.

Boston & Maine
 Central Vermont
 Chicago & Alton
 Grand Trunk Lines. *October, 1904.*

National Dispatch Refrigerator Line.

C. R. COOPER, Gen. Manager.....Chicago, Ill.

Boston & Maine
 Central Vermont
 Grand Trunk Ry. System
 and connections. *November, 1908.*

Nickel Plate Line.

CARL HOWE, Manager.....Buffalo, N. Y.

Bessemer & Lake Erie
 Boston & Albany
 Boston & Maine
 Central R. R. of New Jersey
 Chicago, Indiana & Southern
 Cleveland, Cincinnati, Chicago & St. Louis
 Lake Erie & Western
 New York Central & Hudson River
 New York, Chicago & St. Louis
 New York, New Haven & Hartford
 Philadelphia & Reading
 Pittsburg & Lake Erie
 Toledo, St. Louis & Western
 West Shore
 Wheeling & Lake Erie
 and connections. *October, 1908.*

New York Dispatch Refrigerator Line.

C. R. COOPER, Gen. Manager.....Chicago, Ill.

Grand Trunk System
 West Shore
 and connections *November, 1908.*

North & South Dispatch.

J. H. BROWN, Mgr. 728 Monadnock Bldg., Chicago, Ill.

Alabama & Vicksburg Ry.
 Chicago, Indiana & Southern R. R.
 Cleveland, Cin., Chi. & St. Louis Ry. (via Cairo, Ill.)
 Indiana Harbor Belt R. R.
 Lake Erie & Western R. R.
 Lake Shore & Michigan Southern Ry.
 Michigan Central R. R.
 Mobile & Ohio R. R. (via Cairo, Ill.)
 New Orleans & Northeastern R. R.
 New York, Chicago & St. Louis R. R.
 Vicksburg, Shreveport & Pacific Ry. *April, 1908.*

North Shore Dispatch.

CARL HOWE, Manager.....Buffalo, N. Y.

Boston & Albany
 Boston & Maine
 Central R. R. of New Jersey
 Chicago & Alton
 Chicago, Indiana & Southern
 Cincinnati, Hamilton & Dayton
 Cleveland, Cincinnati, Chicago & St. Louis
 Michigan Central
 New York Central & Hudson River (Penn. Div.)
 New York, New Haven & Hartford
 Philadelphia & Reading
 Toronto, Hamilton & Buffalo
 West Shore
 and connections. *October, 1908.*

Ontario Central Dispatch.

J. C. ANDERSON, Gen. Manager.....New York, N. Y.

Ann Arbor
 Central New England
 Central R. R. of New Jersey
 Chicago & Alton
 Chicago & Eastern Illinois
 Cleveland, Cincinnati, Chicago & St. Louis
 Delaware & Hudson
 Lake Erie & Western
 Michigan Central
 New York Central & Hudson River (R. W. & O. Div.)
 New York, New Haven & Hartford
 New York, Ontario & Western
 Philadelphia & Reading
 Toledo, St. Louis & Western
 and connections. *April, 1907.*

Queen & Crescent Dispatch.

H. A. POVELITE, Manager. 41 Ingalls Bldg., Cincinnati, O.

Alabama & Vicksburg
 Alabama Great Southern
 Cincinnati, New Orleans & Texas Pacific
 New Orleans & Northeastern
 Southern Ry. (St. Louis-Louisville Lines)
 Vicksburg, Shreveport & Pacific *November, 1908.*

Reading Dispatch.

CHAS. J. HAIGH, Manager.....Buffalo, N. Y.

Ann Arbor
 Boston & Maine
 Central R. R. of New Jersey
 Cincinnati, Hamilton & Dayton
 Delaware & Hudson
 Detroit & Toledo Shore Line
 Grand Trunk Ry. System
 Lehigh Valley
 New York, New Haven & Hartford
 Philadelphia & Reading
 Williamsport & North Branch. *July, 1908.*

Red Line Transit Company.

CARL HOWE, Manager.....Buffalo, N. Y.

Boston & Albany
 Boston & Maine
 Central R. R. of New Jersey
 Chicago & Alton
 Chicago, Indiana & Southern
 Chicago, Peoria & St. Louis
 Cleveland, Cincinnati, Chicago & St. Louis (Mich. Div.)
 Lake Erie & Western
 Lake Shore & Michigan Southern
 New York Central & Hudson River System
 New York, New Haven & Hartford
 Northern Central
 Philadelphia & Reading
 Pittsburg & Lake Erie
 Rutland
 Toledo, Peoria & Western
 Toledo, St. Louis & Western
 Wabash. *October, 1908.*

FAST FREIGHT LINES—CONTINUED.

R. W. & O. Line. Whittier, Gen. Agent.....Boston, Mass. Ann Arbor Boston & Maine Cincinnati, Hamilton & Dayton Grand Rapids & Indiana Hocking Valley Maine Central New York Central & Hudson River (R. W. & O. Div.) Pere Marquette Rutland St. Johnsbury & Lake Champlain Wabash and connections. <i>January, 1907.</i>	Traders' Despatch. L. Briggs, Manager.....Chicago, Ill. Bessemer & Lake Erie Boston & Maine Buffalo, Rochester & Pittsburg Central R. R. of New Jersey Chicago & Alton Chicago, Indiana & Southern Cincinnati, Hamilton & Dayton Cincinnati, Indianapolis & Western Delaware & Hudson Co Elgin, Joliet & Eastern Illinois Central (Peoria Division) Lake Erie & Western Lehigh Valley Louisville & Nashville New York, Chicago & St. Louis New York, New Haven & Hartford Pennsylvania Co. (Toledo Division) Philadelphia & Reading Toledo, St. Louis & Western Zanesville & Western. <i>January, 1907.</i>	Wabash & Lackawanna Despatch. E. R. Newman, Agent.....Chicago, Ill. Ann Arbor Boston & Maine Central Railroad of New Jersey Chicago, Indiana & Southern Delaware & Hudson Delaware, Lackawanna & Western Elgin, Joliet & Eastern New York, New Haven & Hartford Philadelphia & Reading Wabash All roads west of Chicago. <i>October, 1907.</i>
Rutland-Michigan Central Line. Carl Howe, Manager.....Buffalo, N. Y. Boston & Albany Boston & Maine Michigan Central New York Central & Hudson River (R. W. & O. Div.) Rutland and connections. <i>October, 1908.</i>	Union Line. E. A. Dawson, Manager.....Chicago, Ill. Pennsylvania Lines Pennsylvania R. R. <i>July, 1901.</i>	West Shore Line. Carl Howe, Manager.....Buffalo, N. Y. Boston & Albany Boston & Maine Central R. R. of New Jersey Chicago, Indiana & Southern Cleveland, Cincinnati, Chicago & St. Louis Lake Erie & Western Lake Shore & Michigan Southern Louisville & Nashville New York Central & Hudson River (Penn. Div.) New York, New Haven & Hartford Philadelphia & Reading West Shore and connections. <i>July, 1908.</i>
Seaboard Despatch. Gen. Eastern Agent.....Baltimore, Md. Seaboard Air Line Pennsylvania and connections. <i>August, 1908.</i>	Virginia, Tennessee & Georgia Air Line. S. M. Stevenson, Manager.....New York, N. Y. Baltimore Steam Packet Co Chesapeake Steamship Co Clyde Steamship Co Merchants & Miners Transportation Co Norfolk & Western Ry Old Dominion Steam Ship Co Southern Ry via Bristol and connections. <i>October, 1907.</i>	White Line Central Transit Company. Carl Howe, Manager.....Buffalo, N. Y. Baltimore & Ohio Southwestern Boston & Albany Boston & Maine Central R. R. of New Jersey Chicago, Indiana & Southern Cleveland, Cincinnati, Chicago & St. Louis Dayton & Union Evansville & Terre Haute Lake Shore & Michigan Southern Louisville & Nashville New York Central & Hudson River System New York, Chicago & St. Louis New York, New Haven & Hartford Philadelphia & Reading Rutland and connections. <i>October, 1908.</i>
Shenandoah Despatch. Dr. Los Thomas, Manager.....Roanoke, Va. Baltimore & Ohio Norfolk & Western Southern and connections. <i>July, 1908.</i>	Southern States Despatch. Dr. Los Thomas, Gen. Agent.....Roanoke, Va. Norfolk & Western Philadelphia & Reading Southern Western Maryland. <i>April, 1908.</i>	

Source: The Official Railway Equipment Register, National Railway Publication Company, New York, N.Y., December, 1908.

APPENDIX THREE

RELEVANT EXCERPTS FROM RAILROAD COMPANY PUBLICATIONS

Chessie System, Inc., 1976 Financial Summary and Supplement to the Annual Report.

Of the 200 merchandise freight trains moved daily over Chessie Lines, nearly thirty are "run-through" trains.

They take their names from the fact that, unlike ordinary freight trains, they do not stop at the end of Chessie's lines. Instead, they halt briefly to pick up a connecting line's crew and then continue on, locomotives and all, for the rest of their journey.

Chessie run-throughs operate from Toledo to Atlanta, from Chicago to Montreal, even from coast-to-coast. The connecting railroads have the same arrangement with Chessie. A Southern Pacific locomotive in Cumberland, Md., for instance, is no longer an unfamiliar sight to residents of that B&O community.

A brand-new Chessie run-through will begin operating this week in cooperation with the Seaboard Coast Line and the Clinchfield Railroad. It will run between Savannah, Ga., on the SCL, and Russell, Ky., a major Chessie classification point, where other Chessie trains will pick up its cars for final delivery.

The running time will be shortened by twelve to twenty-four hours between such important markets as Chicago, Detroit and Saginaw and Tampa, Miami and Jacksonville.

Chicago and North Western Transportation Company, 1976 Annual Report, Letter from J.R. Wolfe, President and Chief Executive Officer, to Stockholders.

Two of our major success stories have been our Wood Street Falcon trains and the location by

Toyota of a midwest distribution center on our railroad. The Wood Street Falcon trains haul piggyback trailers in fast, run-through trains in cooperation with the Union Pacific Railroad between Chicago and the west coast. In 1976, the Falcons posted a 27% jump in revenue car-loading over 1975 and are continuing to grow in 1977. Toyota decided to locate on our railroad after testing our service in cooperation with the Union Pacific Railroad and comparing this with service offered by competing railroads.

IC Industries, Inc., 1976 Annual Report.

A new coordinated run-through service permits Soo Line Canadian traffic to and from the Southeastern United States to run through to the ICG Markham Yard and reduce Chicago terminal time significantly. Tied in with this service is improved coordinated movement between the ICG and the Seaboard Coast Line through the Birmingham area.

A new joint ICG-Cotton Belt-Southern Pacific service builds upon the base of existing auto parts traffic to seek an increased ICG share of Midwest-Southwest traffic via the St. Louis gateway. "The Central Link," operated in conjunction with ConRail via Effingham, Illinois, and opened late in 1975, has proven highly successful. Northbound traffic increased 44 percent in the first year. The ICG-Norfolk & Western "Delta Cannonball" coordinated service through Tolono, Illinois, was established early in 1977. This connection provides expedited service between the Northeast and the Deep South and Southwest, bypassing Chicago.

Missouri Pacific Railroad Company, 1976 Annual Report.

Three new unit train operations were added during the year to handle western coal moving from Utah, Colorado and Wyoming to points in

Illinois and Oklahoma. A fourth new coal unit train was established between Southern Illinois and Chicago. All four are run in conjunction with connecting railroads.

St. Louis - San Francisco Railway Company, 1976 Annual Report.

The efficiency of train movement has been noticeably enhanced by the operation of run-through trains which by-pass intermediate yards and conserve time once spent on car interchange. Often run-through trains use the same pooled motive power as they proceed from one railroad to another. Frisco now participates with other rail carriers in the movement of ten run-through trains per day.

Southern Pacific Transportation Company, 1976 Annual Report.

Construction of a new coal-fired electric generating plant by the City of San Antonio, Texas, provided Southern Pacific with the opportunity to handle, in cooperation with another railroad, its first unit coal train. The plant, located on Company lines at Elmendorf, Texas, has a total capacity of 872,000 kilowatts. Fuel requirements are estimated to be 3,000,000 tons of coal annually. The initial 110-car coal train moved in October.

Union Pacific Railroad, Info, December, 1976.

As January, 1976, came into view, Toyota initiated performance testing in which Union Pacific and one other railroad faced-off. In these tests involving six shiploads of automobiles, half of the cars were routed over the competing carrier and half over UP. Through the test period, a Union Pacific-Chicago and North Western partnership delivered the new Toyotas into Chicago, Kansas City, and

St. Paul ahead of the promised schedules in every instance, demonstrating the consistent service sought by Toyota.

APPENDIX FOUR

Bibliography

American Association of Railroad Superintendents, Committee 2, "Railroad Operations 10 Years From Now," Proceedings of the Seventy-Fifth Annual Meeting and Committee Reports, 1971.

The committee observed that it had been estimated that in order to survive, the railroads must find means of getting at least twice the work out of its freight-car fleet than it now enjoys. To help achieve this goal, it was forecast that increased cooperation between railroads will make inter-railroad blocking arrangements and power pools common practice, and solid trains will cross the continent without power and consist change. These pre-blocking arrangements will help slow the construction of new marshalling yards, and existing yards will be modernized for the purpose of expediting traffic.

Association of American Railroads, "Chessie, Family Lines Start Run-Through Train Services", Information Letter, January 19, 1977.

Reported that the Chessie System and Family Lines System had begun a run-through freight service in both directions between Savannah, Ga. and Russell, Ky. Locomotives from each railroad will be pooled, and traffic will be pre-blocked at Savannah and Russell. The new service will allow faster movement between such points as Miami, Jacksonville, Tampa, Savannah, Columbia, Charlotte, Toledo, Columbus, Cleveland, Detroit and Canada.

Claytor, W. Graham, Jr., New Concepts in Railroading, Shearson, Hamill & Co., March 19, 1971.

The author, President of Southern Railway System, reported that Southern Railway was participating in seven run-through trains and expected the concept to spread widely among railroads. The purpose of the trains is to reduce time and costs of handling through traffic and to relieve congestion in yards. The interchange between railroads and the collection and distribution of freight cars are the prime bottlenecks for railroads, and the use of pooled power and close operating coordination in run-through trains should provide a way out of this congestion dilemma.

Folk, Joseph F., Studies in Railroad Operations and Economics, Volume 5, Models for Investigating Rail Trip Time Reliability, prepared for the Federal Railroad Administration, Massachusetts Institute of Technology, June, 1972.

Shows results of three different types of trips over a route involving five yards for train frequencies of 24 and 12 hours. For train frequency of 24 hours, mean trip time was 109.2 hours

when four yards were traversed, 91.9 hours when three yards were traversed and 77.5 hours when two yards were traversed. For train frequency of 12 hours, mean trip time was 100.1 hours when four yards were traversed, 85.1 hours when three yards were traversed and 71.3 hours when two yards were traversed. The author concluded that among various methods of decreasing unreliability the yard by-pass method would appear to have the highest payoff.

Hasselman, Richard B., Reply Verified Statement Before the Interstate Commerce Commission, Ex Parte 270 (Sub-No. 2), Investigation of Railroad Freight Service, July 3, 1972.

The witness points out that to minimize transit time, it is essential that traffic be handled in the least possible number of intermediate yards. The Penn Central takes advantage of opportunities for by-passing yards, which requires coordination to insure that work will be done at one location to benefit another location. These pre-blocking arrangements involve yards on other railroads as well as yards on the Penn Central.

Manion, R.R., Reply Verified Statement Before the Interstate Commerce Commission, Ex Parte No. 270 (Sub-No. 2), Investigation of Railroad Freight Service, July 3, 1972.

To show evidence of a service oriented rail industry, the witness includes run-through trains as one of several methods employed by the industry to improve service.

Martland, Carl D., Studies in Railroad Operations and Economics, Volume 12, Procedures for Improving Railroad Reliability, prepared for the Federal Railroad Administration, Massachusetts Institute of Technology, March 1974.

The author found that in by-passing the classification process in a yard cars avoid delays typically ranging from several hours to two days. Identified run-through trains as one of the most cost-effective means of improving railroad reliability.

_____, and Joseph M. Sussman, Studies in Railroad Operations and Economics, Volume II, Improving Railroad Reliability: A Case Study of the Southern Railway System, prepared for the Federal Railroad Administration, Massachusetts Institute of Technology, March, 1974.

The study considered five major strategies for improving yard reliability and decreasing yard times, which included revising the blocking policy to enable some cars to by-pass certain classification yards.

Shaffer, Frank E., "The Yard with the Long Reach," Modern Railroads, July, 1973.

From interviews with officials of Southern Pacific Lines (SP), the author relates the factors considered in locating a major yard at Colton, Cal. and describes the basic design and operation of the yard. Yards north of Colton will classify traffic for Colton, and Colton will make up blocks or solid trains for eastern points. When Colton yard gets into full operation the number of run-through trains operated by the SP are expected to increase.

Shedd, Tom, "How to Make Yards Work for Us," editorial comment, Modern Railroads, July, 1973.

The author observes that a new yard strategy is beginning to emerge. More and more, railroads are looking at their classification yards as tools to aid traffic flow over as well as beyond their own lines. Basic principle is to block cars as soon as possible for the longest possible haul, which avoids reclassifying at intermediate yards. Ultimate development of the concept will be to consider the entire country as one network, and to plan the operation of at least the key yards on a nationwide basis.

_____, and Robert Roberts, "Are the Critics Right," Modern Railroads, July, 1973.

The authors point out that critics have accused classification yards of being the major barrier to greater reliability of service. The accusation was valid in the past when each yard dumped its output on the next yard down the line, but the new yards of the Seventies reflect a basic change in philosophy of operations. Yard operations are now being planned to move trains past other yards, not through them. The key is not the number of hours spent in one yard but the total classification time in all yards.

Sillcox, Lewis K., Dead-Time-Drag, presentation before the Graduate School of Business Administration, Harvard University, January 28, 1975.

It was pointed out in the presentation that "money is time and time is money." The time savings realized from run-through freight trains result in more reliable service, vastly improved utilization of cars and motive power, a better image with customers which should lead to increased traffic, and more revenue and more profit. An intangible benefit is pride in the service rendered, which influences those who sell as well as those who operate the service.

Special Report on Modern Railroads Conference, "New Directions in Railroad operations," Modern Railroads, December, 1972.

The report on a conference of top operating officers of 14 railroads concluded that the only problem with run-through freight train operation is that there are not enough trains handled in this manner. Delegates were unanimous in praising such benefits of run-through trains as faster handling of freight, better equipment utilization and reduction in yard operations.

Staff Writer, "Run-Through Trains: The Proof is in the Bottom Line," Railway Age, February 25, 1974.

The article reports that run-through trains are building business, increasing revenues, contributing to net income, having an effect on new labor agreements and the opening of new yards, and demonstrating that railroads can work together. It was also reported that the Southern Pacific is using their Total Operations Processing System (TOPS) for automatic blocking instructions, and that the Frisco Railroad upgraded 175 miles of line in Oklahoma principally to improve service reliability on transcontinental operations.

Stenger, Alan J., and Frederick J. Beier, "Effective Carrier Marketing Strategies: The Case of the Railroads," Transportation Journal, Summer, 1976.

The authors pointed out that studies have shown that most of the delay in the movement of freight cars occurs at terminals, and the longer the train, the more likely there will be delays. In view of this, carriers have begun to block cars more efficiently in trains to minimize switching, and to operate run-through trains which bypass intermediate terminals. While there may be some cost savings through improved service reliability, the greatest benefits are as a marketing tool.

Task Force on Railroad Productivity, Improving Railroad Productivity, final report to the National Commission on Productivity and the Council of Economic Advisers, November, 1973.

The Task Force concluded that train schedules and operations are the crux of many of the railroads' problems. Revision of train-operating policies, including the operation of run-through trains and pre-blocking, will be a key factor in improving the quality of rail service, which will attract new traffic to the rails. At the same time, revision of train-operating policies is likely to be the most cost-effective means of expanding the capacity of the rail system.

The Pocket List of Railroad Officials, A Sound Approach to the Railroad Market, 1976.

Run-through trains are reported as being one of the operational advances developed by railroads to attract new business and regain traffic lost to other modes of transportation.

Troup, Kenneth F., (ed.) U.S. DOT Transportation Systems Center, Railroad Classification Yard Technology: An Introductory Analysis of Functions and Operations, Transportation Systems Center, U.S. Department of Transportation, May, 1975.

The study describes run-through trains as trains that handle cars from origin to destination without making intermediate stops for reclassification purposes, which may be operated over more than one railroad. Run-through trains sometimes will make intermediate stops to pick up or set out blocks of cars. Pre-blocking refers to an operation in which cars are grouped so that the cars can be handled as blocks when they are reclassified at another location. Pre-blocking requires more switching at the origin yard but saves time and simplified operations at other yards.

Vander Veer, Walter, remarks pertaining to a committee report entitled "Service Reliability - Action", Proceedings of the Eightieth Annual Meeting and Fourth Regional Meeting of the American Association of Railroad Superintendents, 1976.

Mr. Vander Veer acknowledged that the operation of run-through trains is a great concept and is certainly a forward step. It was started several years ago and should be expanded. Sometimes, however, the volume of traffic between specific points is not sufficient to justify the operation of run-through trains.

Ward, Edward J., "Technology and Reviving the Railroads", Technology Review, July/August, 1976.

Author points out that railroads are giving faster service with run-through trains, which by-pass most yards and run straight through from origin to destination, pausing only for crew changes, safety inspections, and pick-up and/or set-off of pre-blocked cars. Participating railroads generally pool locomotives to power run-through trains.

Welty, Gus, "Run Anywhere, Run Fast, Run Through", Railway Age, February 26, 1973.

The author observes that run-through trains increase utilization of main lines, freight cars, motive power and manpower; minimizes the use and congestion of yards; reduces transit time; and produces more dependable and predictable service. Some problems associated



with run-through trains are locomotive compatibility (primarily radios and gearing), quality of locomotive maintenance varies from one railroad to another, and shippers may start complaining if all their cars do not move on these trains.

_____, "Rail Service in the Recession: The Quality Stays High", Railway Age, July 28, 1975.

The article relates that run-through trains are being added and pre-blocking arrangements are being refined by both large and small railroads. Some run-throughs are being operated only as required because of insufficient volume to justify operation, but the list of recent new operations is impressive.

_____, "Operations: Precise Blocking, Run-Through Trains Create Sales Tools", Railway Age, August 30, 1976.

Precise blocking is defined as first-blocking to minimize subsequent handling and reclassification. A run-through train is defined as a cut of cars that stay together from origin to destination with a minimum of intermediate picking up and setting out regardless of whether there is interline operation of motive power and/or cabooses. Article includes discussion of problems such as errors in blocking "short" traffic on a run-through and matching gearing on locomotives of different ownership, as well as activity among various railroads. Author concludes that problems with precise blocking and run-through trains have been minimal, and that this type of operation is proving to be a valuable sales tool.

_____, "Union Pacific: A Great Big Rolling Railroad", Railway Age, December 27, 1976.

The article points out that to offset the disadvantages of not directly serving northern California and Gulf of Mexico areas and such major gateways as Chicago, St. Louis and Memphis, the Union Pacific Railroad (UP) is participating in 27 run-through train operations with 10 other railroads through the Omaha and Kansas City gateways. Included are three transcontinental run-through trains, one handling perishables from California to Philadelphia and the others providing service between eastern points and the Pacific Northwest, Los Angeles and the Bay Area. In addition to run-through trains, the UP is also participating in blocking arrangements with other railroads.

Wyckoff, D. Daryl, Railroad Management, D.C. Heath and Company, 1976.

The author points out that there is substantial agreement, even among railroaders who in the past promoted the large automated yards, that avoidance of yards with run-through operations is highly desirable. Many railroaders also see great advantage in moving cars in large blocks.

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