YARD UNRELIABILITY IN RAIL FREIGHT MOVEMENT

by

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ABSTRACT

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Submitted to the Department of Civil Engineering on May 14, 1971 in partial fulfillment of the requirements for the degree of Master of Science.

Transit time unreliability provides a major explanation for the railroad industry's low rate of return on investment and declining share of the freight transportation market.

Although rail terminals have long been suspected of being the major contributor to erratic car movement performance, there has been little previous investigation into the causes for unreliability. Using data from a major railroad terminal, this study identifies the causes of freight car delays and develops relationships between yard time parameters and a car's performance through a terminal.

The major findings of this study (for the yard analyzed) are:

1. One-third of all loaded cars and two-thirds of all empty cars miss their scheduled outbound train connection.
2. Over two-thirds of all car delays are the result of the cancellation of outbound trains or the holding of cars in yards because of limitations on train capacity.
3. Cars which must be repaired, cars which are placed on an incorrect outbound train, and cars which are held because they lack destination information - delay types often sited as major causes of unreliability - account for only five percent of all car delays.

While definitive conclusions can not be drawn from a single terminal, it appears from this study that reductions in transit time are possible only with major improvements in the consistency of line haul freight train operation.

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CHAPTER I

INTRODUCTION

Although railroads handle over 40% of all United States freight ton-miles, the industry is plagued with a low rate of return on capital and a dwindling market share. The majority of traffic still handled by railroads is low-value (and low revenue) raw materials. High-value (and high revenue) merchandise is increasingly handled by truck.

Although government regulation is partly to blame for the poor health of American railroads, the market split between rail and truck is largely explained by examining the costs of transporting merchandise. These costs can be subdivided into four basic components:

1. the rate charged
2. loss and damage to merchandise in transit
3. transit time
4. transit time unreliability

Rail rates are generally lower than those of trucks. Loss and damage experience for both modes is equivalent. Transit time, although longer for rails, is not a primary concern of the shipper (except for perishable commodities or for rush orders to meet extraordinary demands). Transit time unreliability, however, known to be a serious problem in rail service, frequently constitutes a major

additional cost to the shipper. (While a longer transit time may require a receiver to maintain somewhat larger inventories, unreliability greatly increases the possibility of very costly inventory shortages, often necessitates rush orders shipped by high-cost modes, and can result in low productivity of warehouse employees.) It must be concluded that transit time unreliability is the major explanation for the declining rail market share.

Although railroad terminals have long been suspected of being the major contributor to car delays, there has been little previous research into the causes of transit time unreliability. This report identifies the causes of unreliability and investigates the causal relationships between yard time parameters and car movement performance.

CHAPTER II

CAR MOVEMENT THROUGH A RAILROAD NETWORK

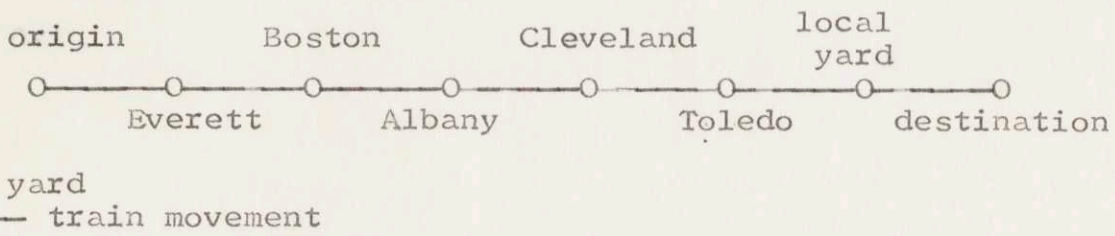
2.1 RELATIONSHIP OF LINE HAUL AND TERMINAL PERFORMANCE TO TRANSIT TIME UNRELIABILITY

To better understand the railroad unreliability problem, an introduction to the operation of rail networks is necessary.

When a shipment is available, the highest level of service - lowest transit time and unreliability - is obtained when this one shipment is handled directly from shipper to receiver (e.g., handled by truck). This type of service, however, is also expensive. A lower-cost alternative is the railroad. At each yard, shipments moving in a common direction are consolidated into a car "block", placed in a train consisting of one or more blocks, and handled together to the next yard which may be twenty to several thousand miles distant. At each yard the car enters, it is reswitched and consolidated with other traffic to build a new train. This procedure is repeated until the car reaches its final destination.

Necessarily, the consolidate-switch process results in a longer transit time than required for direct movement. More important, however, is the fact that this process is unreliable. As an example of car movement through a network, let us follow the movement of a car from Everett, Mass. to

Toledo, Ohio.



Car Movement from Everett, Mass. to Toledo, Ohio

Figure 1

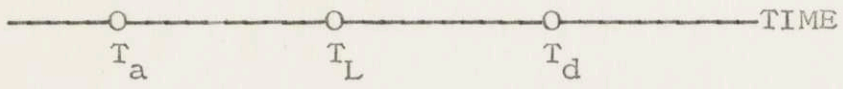
Each operation in the diagram above involves some degree of unreliability. Trains can be delayed for numerous reasons such as mechanical failures, track congestion, changing crews, and so on. In addition, a train may not run at all due to a lack of traffic, lack of locomotives or crews, or for other causes. In each yard a car can miss a connection, be classified into the wrong outbound train, require mechanical repairs, be missing destination information (a "no bill"), and so on.

There is no direct relationship between line haul train performance and the movement of a car through a terminal, nor hence, to the unreliability of transit time between car origin and destination. Note the following diagram:

T_a : Scheduled arrival time of the inbound train

T_d : Scheduled departure time of the connecting outbound train

T_L : Latest time the inbound train can arrive and still connect to the outbound train



Railroad Car's Terminal Time

Figure 2

It should be noted that if the total delays suffered by the inbound train are less than $T_L - T_A$ the car remains on schedule. However, when inbound train delays exceed this level, the car generally suffers a quantum increase in transit time equal to the time until the next outbound train departs. For the remainder of this report, $T_L - T_A$ will be referred to as "slack" time, and $T_D - T_L$ as the "threshold" time.

Two comments are in order. First, the threshold time for a yard will vary depending upon the time of day and traffic patterns. Cars with less than the threshold time available can make their proper connection, but only if they are given special handling or the outbound train is delayed for these cars. However, within the threshold region the probability of missing a connection is very high. Second, it should be clear that the greater the slack time available for a connection, the less sensitive car performance becomes to line haul delays.

Because of this relationship between line haul performance and yard performance and the unreliability of a connection, each train and the following yard can be viewed as a

single operation with an anticipated delay probability which is different for each outbound connection. In the example above of a car moving from Everett to Toledo, there are six such line haul/yard combinations. For a car traveling over this route, a 5% probability of missing a connection at each terminal delays one car out of four ($1 - .95^6 = .73$). One car in two is delayed with a missed connection delay probability of 11%. Thus, even small probabilities of missing each connection - when coupled in series - will produce high levels of overall movement unreliability.

2.2 GENERAL POLICIES FOR REDUCING TRANSIT TIME UNRELIABILITY

Clearly, there are two policies the railroads can follow to overcome this unreliability: reduce the level of unreliability at each yard, or accept the present level of unreliability at each yard and reduce the number of yards through which a car must pass. (Traveling through three yards, each with a failure probability of .20, results in almost exactly the same transit time distribution as traveling through six yards, each with a delay probability of only .10.) Railroads have traditionally chosen the second alternative wherever traffic volumes have been sufficient. Few attempts have been made to identify the causes of unreliability in rail networks in order to improve

performance at each yard through which a car must pass. This study tests a procedure for better understanding the causes of car movement unreliability.

CHAPTER III

DEVELOPMENT AND ANALYSIS OF STUDY RESULTS

3.1 SEGREGATION OF CARS INTO CAR-TYPES AND MOVEMENT PERFORMANCE CATEGORIES

The data base for this study consisted of the records of the movement of over 13,000 cars through a major terminal. Each car was classified (computer programs are discussed in Appendix 1) into one of the following car-type classes:

Car-type class	Percent of total sample
Eastbound loaded cars	39%
Eastbound empty cars	4%
Westbound loaded cars	8%
Westbound empty cars	26%
Local loaded cars	12%
Local empty cars	11%

Note: A car was classified as "local" if it was handled by either an inbound or an outbound local train.

Based upon the car's scheduled outbound connection, each car was also classified into one of the following categories:

A. Cars moving in advance of their scheduled connection due to:

1. Early arrival of the inbound train
2. Expedited movement through the terminal
3. Late departure of the outbound train

B. Cars making scheduled connection due to:

1. Normal yard performance

2. Expedited yard performance

3. Late departure of the outbound train

C. Cars missing their scheduled connection due to:

1. Late arrival of the inbound train

2. Delay in switching the inbound train

3. The outbound train's not carrying that car's classification block, or not running

4. Other reasons, including cars which must be repaired ("rips"), no-bills, and empty cars being cleaned

Cars were tabulated according to type, movement category, and both actual and scheduled yard time. As a result, it was possible:

1. To analyze present car movement performance and identify major causes of delay (See Section 3.2); and parameters and car movement performance (See Section 3.4).

3.2 PERFORMANCE OF CARS THROUGH A TERMINAL

Figure 3 summarizes the distribution of car movements by car-type class. Recall that the predominant flow of loaded cars is eastbound, and of empty cars, westbound. The following points can be noted from this table:

1. On-schedule performance (for the total sample or on a disaggregate basis) is poor. Only 68% of loads and 32%

CAR GROUPS	CARS MOVING IN ADVANCE OF SCHEDULE	CARS MOVING ON SCHEDULE DUE TO: NORMAL YARD MOVE	EXPEDITED YARD MOVE	LATE DEPARTURE OF OUTBOUND	CARS DELAYED DUE TO: LATE INBOUND TRAIN	LATE SWITCH	OUTBOUND TRAIN CANCELLATION	OTHER (RIPS, NO-BILLS, ETC.)
EASTBOUND:								
LOADED CARS	2%	57%	7%	13%	8%	2%	9%	1%
EMPTY CARS	1%	49%	0%	6%	8%	6%	27%	2%
WESTBOUND:								
LOADED CARS	1%	30%	0%	1%	14%	2%	48%	2%
EMPTY CARS	1%	23%	0%	0%	13%	3%	57%	3%
LOCAL								
LOADED CARS	2%	50%	0%	2%	9%	5%	29%	3%
EMPTY CARS	1%	41%	0%	1%	5%	8%	40%	5%
TOTALS								
LOADED CARS	2%	52%	5%	9%	9%	2%	18%	2%
EMPTY CARS	1%	30%	0%	1%	11%	4%	50%	3%
ALL CARS	2%	43%	3%	6%	10%	3%	31%	2%

Note: OUTBOUND TRAIN CANCELLATION includes blocks removed from trains actually operated.

PERFORMANCE OF CARS THROUGH TERMINAL

Figure 3

of empties leave on the correct train (regardless of how late that train is when it departs). Best on-schedule performance (for both loaded and empty cars) is achieved by eastbound cars - 79% of all eastbound loads and 68% of all eastbound empty cars made their proper connection. (Included in these percentages are cars which made proper connection due only to the late departure of the outbound train - 13% of eastbound loads and 6% of eastbound empties fall into this category.)

2. The delays due to blocks of cars, or total trains, not being run are striking - one-third of all cars and one-half of all empties moving through the yard are so delayed. This one delay category outnumbers all other delay categories combined by more than two-to-one.

3. Delays due to the late arrival of inbound train or to excessive queue time in the receiving yard before a train is switched account for 13% of all car movements, and over one-quarter of all delays. (The reason for combining these two delay groups is discussed below.)

4. All other delays - including cars which are shopped, no-bills, shipper ordered hold cars, and cleaned cars - account for only 2% of all car movements and 5% of all delays.

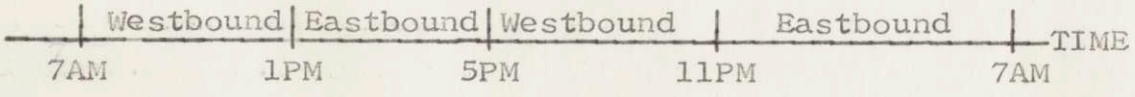
Clearly, car delays resulting from the late arrival

of inbound trains are beyond the control of yard personnel. The situation with late switch delays and outbound train build-up delays, however, requires further investigation.

3.3 ANALYSIS OF CAR MOVEMENT PERFORMANCE THROUGH A TERMINAL

3.3.1 DELAYS DUE TO THE LATE SWITCHING OF INBOUND TRAINS

Efficient operation of large yards requires that inbound and outbound train demands be spread throughout the day. As a consequence, train movements are scheduled to avoid (as much as possible) high peaks in yard demands. Due to capacity constraints, one scheduling method employed to ameliorate the movement of cars through the terminal is "fleet scheduling" - the yard switches several trains in one direction, then handles traffic in the opposite direction. In the yard analyzed in this study, the following switching pattern must be adhered to if traffic is to move as scheduled:



Scheduled Switching Pattern

Figure 4

Consequently, a westbound train arriving at 11PM (instead of 8PM, for example) may not be switched until 8AM the

next morning, missing connections even though the threshold delay times were exceeded.

Although other situations can result in switching delays, it is clear from the analysis that the two factors discussed above accounted for nearly all excessive switching times.

3.3.2 DELAYS DUE TO CANCELLED OUTBOUND TRAINS

An additional consideration in train scheduling is the balancing of train movements in opposite directions so as to balance crew and locomotive requirements. Inbalances which do occur can only be corrected by non-productive transfer of locomotives and crews between terminals. If locomotives or crews are not available, trains are delayed until the deficiency is made up, or simply not run, seriously affecting car movement performance.

An analysis of the data sample used in this study indicates that:

1. of the 18 trains scheduled into this yard (other than thru trains), on the average day two did not arrive;

2. a corresponding daily fluctuation in the number of outbound trains from a low of 14 to a high of 20. Eastbound trains (11 outbounds scheduled) fluctuated from a low of 9 to a high of 11; lower priority westbounds (6 scheduled) fluctuated between 5 and 9 trains.

In addition to fluctuations of resources, traffic

volume variations can also have a serious effect upon car movement. If too many cars are available for a given train, a traffic block is often removed and held for the next outbound train. Train length can be limited by track configuration, terrain, or the strength of car couplers. If too few cars are available, the train may be cancelled and the cars held in the yard.

An analysis of eastbound car delays revealed most delays resulted from the holding of traffic blocks and not the cancellation of trains. The relatively low percentage of eastbound cars suffering outbound build-up delays attests to the few cars delayed by removing blocks from trains.

Westbound build-up delays, however, were primarily the result of train cancellations. The predominantly empty westbound traffic, given lower priority than the loaded eastbound traffic, was more severely disrupted by resource limitations.

3.3.3 EXAMPLE OF CAR DELAYS RESULTING FROM A TRAIN CANCELLATION

To illustrate the effect of a westbound train cancellation upon car movement performance, the following example is drawn from the data used in this study.

RECORD OF CAR MOVEMENTS, FEBRUARY 20 - 24, 1971

Scheduled departure of train: 4PM, daily

DEPARTURE FROM TERMINAL	ARRIVAL TIME OF CONNECTING INBOUND TRAINS		CARS HANDLED: On schedule	Held from previous train	Total
	Earliest train	Latest train			
(on 2/20)	CANCELLED				
3AM 2/22	2PM 2/18	11AM 2/20	22	107	135
6PM 2/22	10AM 2/20	1PM 2/21	5	96	108
11PM 2/23	8AM 2/21	5AM 2/23	32	84	117
10PM 2/24	1AM 2/23	7AM 2/24	52	17	88
		TOTAL:	111	304	448

Cancellation of a train on February 20 resulted in:

1. The train of the 21st (departed 3AM, 2/22) carrying (except for 22 cars) only those cars available for the cancelled train;

2. The trains of the 22nd and 23rd, because of tonnage limits, leaving cars behind in the yard;

3. The train of the 24th returning cars to schedule, but still handling 17 cars delayed as the result of the cancellation four days earlier.

The total number of cars actually delayed due to the cancellation of one train was 304 (almost 70% of all cars handled during the five day period).

It should be noted that even if the train of the 20th

were held in the yard one full day, the train still could have been run with a resulting reduction in the number of cars delayed from the actual 304 to a maximum of 107, depending upon the delivery pattern at the destination yard.

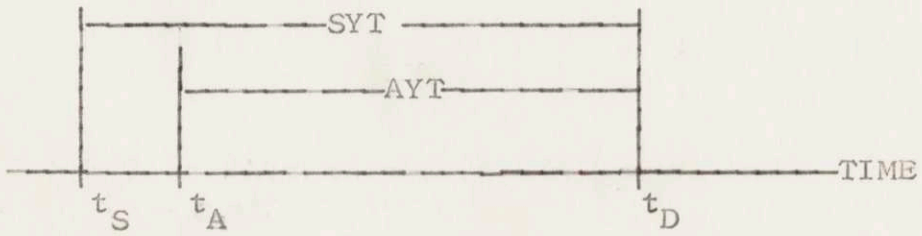
This example, by choice, is somewhat extreme - over 100 cars were available for movement by the cancelled train. However, cancellation of trains for a lack of traffic (a common occurrence on many railroads) will follow this same pattern of cars being held back for the following train. Clearly, as the average traffic volume of a train approaches its capacity, the more time is required to recover from the effect of a cancellation.

3.4. EFFECT OF YARD TIME PARAMETERS UPON CAR MOVEMENT PERFORMANCE

Beyond identifying the sources of transit time unreliability, a second purpose of this study was the development of causal relationships between yard-time parameters and a car's movement performance through a terminal. The two parameters investigated and the value of their relationship to car movement performance are listed below:

1. Scheduled yard time (SYT). The relation of SYT to car performance provides insight into the effect of changes in scheduled connection patterns or the arrival and departure times of trains.

2. Actual yard time (AYT). The relation of AYT to car movement performance illustrates the effect of a late train arrival upon car delays. With the advent of real time decision making, these relationships will be a necessary input if the effects of alternative decisions upon car movements are to be analyzed.



t_S = Scheduled arrival time of the inbound train
t_A = Actual arrival time of the inbound train
t_D = Scheduled departure time of the outbound train

Definition of Yard Time Parameters

Figure 5

Prior to initiating the study, the following results were anticipated:

1. Only cars with the longest AYT or SYT would move in advance of schedule (where an early arrival or late departure could advance cars);

2. The percentage of cars moving on schedule would increase with longer SYT (where more slack time was available as a buffer against late train arrivals). Cars moving on schedule due to the late departure of an

outbound train or due to expedited yard movement would be clustered in the shortest SYT.

3. On-schedule performance for cars with an AYT below the threshold would be very poor. Most cars in this category would be delayed due to late train arrivals.

4. Delays due to late train arrivals or late switching would decrease sharply as SYT increased.

The results of the analysis are presented in sixteen tables (an AYT and SYT table for each of the six car types, plus "ALL LOADED CARS" and "ALL EMPTY CARS") in the Appendix. Of these sixteen tables, ten contain a large enough sample to provide meaningful results. The performance of these car groups is summarized in the figures below.

In studying these figures the following points should be kept in mind:

1. For the yard studied, the shortest scheduled yard time between connections was eight hours; the longest, 31 hours.

2. AYT can range from negative values (for cars on inbound trains arriving after the departure of the appropriate outbound train) to values greater than 31 hours (for cars on inbound trains arriving in advance of schedule). To restrict the length of the table, all cars with an actual yard time of one hour or less were assigned a yard time of

one hour. Cars with an AYT of 32 to 35 hours were assigned an AYT of 32; cars with an AYT of more than 35 hours were assigned an AYT of 33 hours.

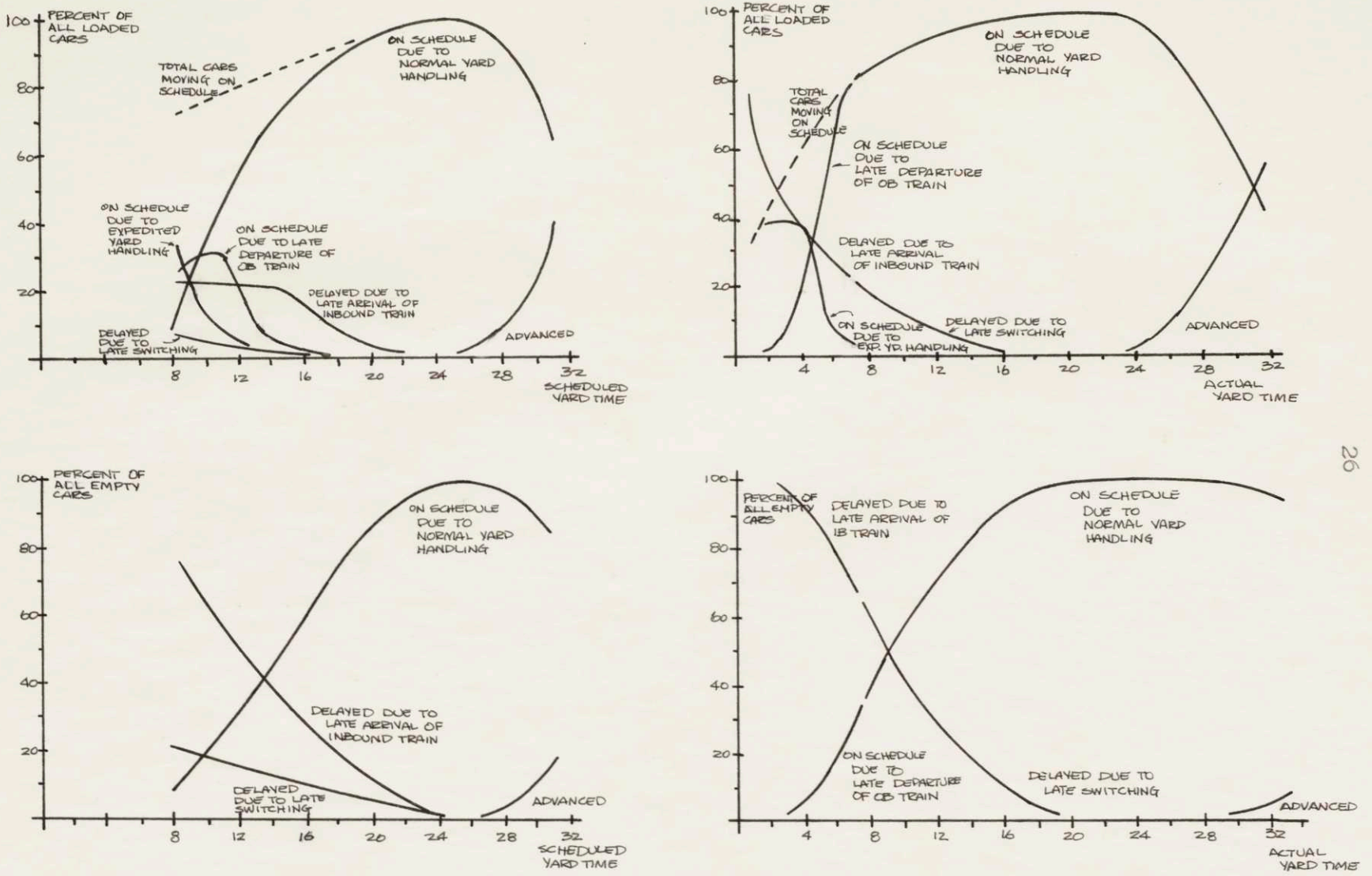
3. There is a discontinuity in several AYT movement categories at an AYT value of eight hours (the minimum scheduled connection time). However, since the distinctions between different on-schedule (and delay) performance classes is a definitional one, a smooth progression from the total percentage of cars moving on-schedule (or delayed) in the one-to-seven hour range, to cars moving on-schedule (or delayed) in the eight-to-thirty-three hour range, should result.

4. Cars delayed due to "outbound build-up" and "other reasons" were removed from this portion of the study. These delays have no causal relationship to yard time parameters.

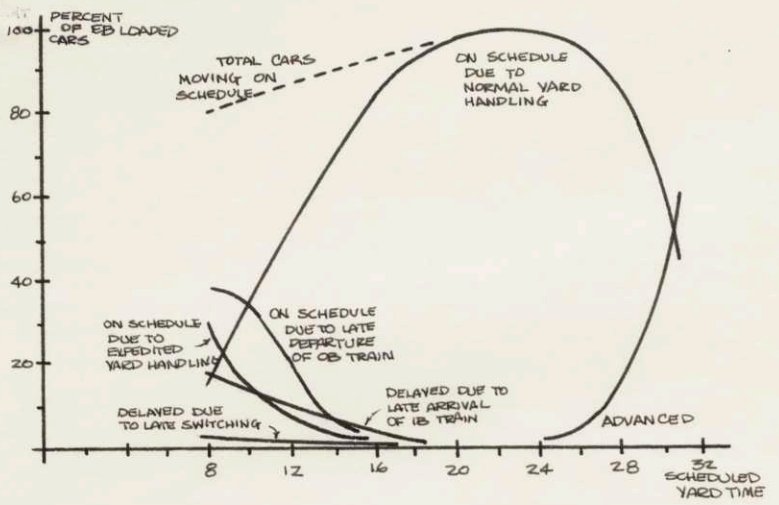
The results of the analysis verify the hypotheses stated above. Some additional comments on the results follow.

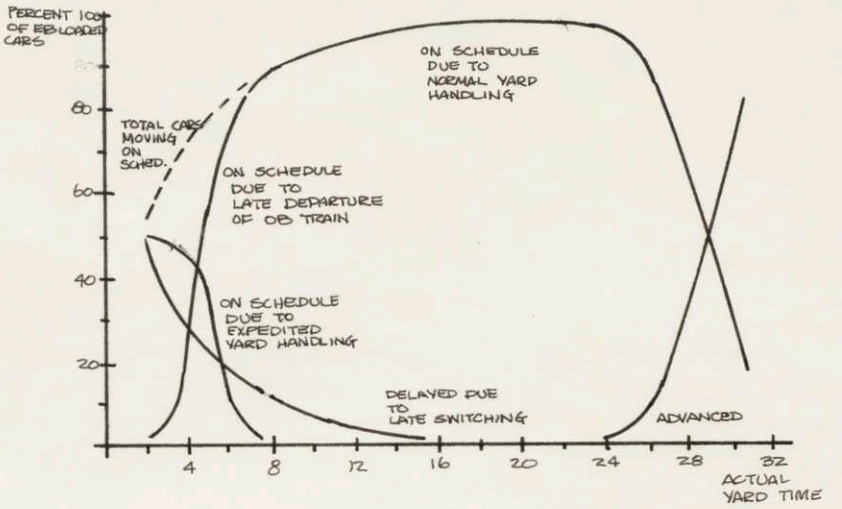
The priority given eastbound loaded cars over westbound empty cars explains much of the difference between the performance of these two car-type categories:

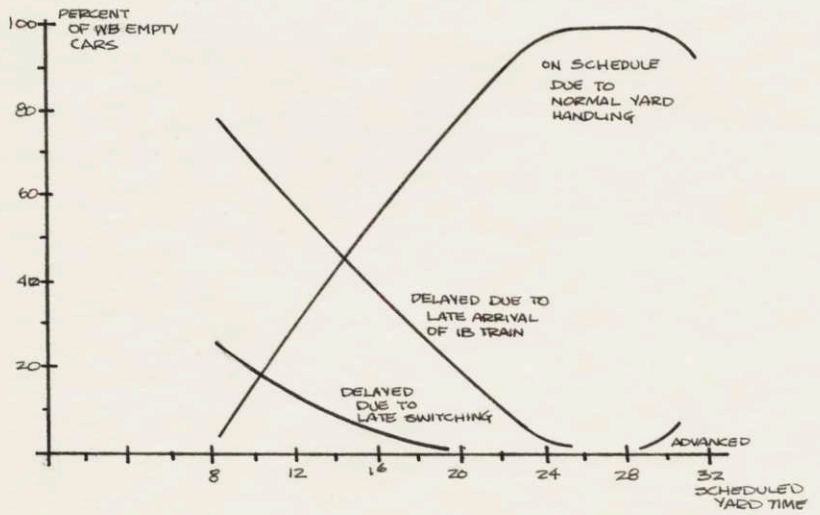
1. While only few westbound empty cars with an AYT below eight hours move on schedule, the majority of short-time eastbound loaded cars move on schedule due to expedited

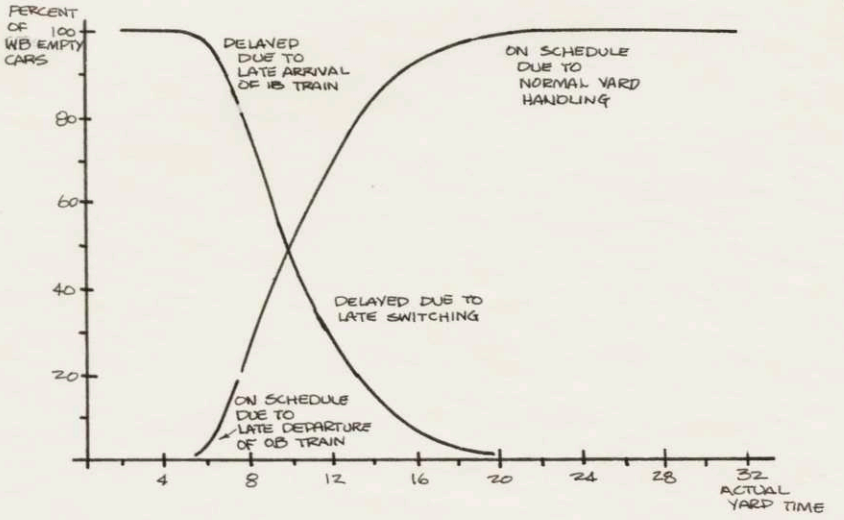


Yard Time versus Car Movement Performance: All loaded Cars and All Empty Cars
Figure 6

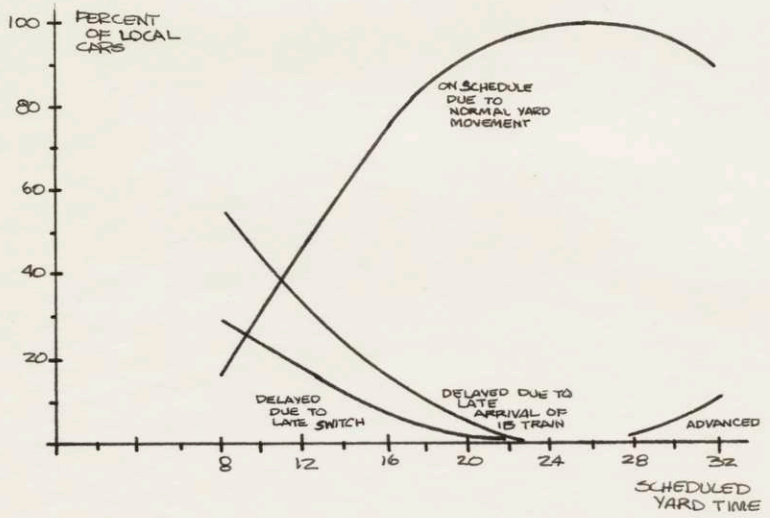


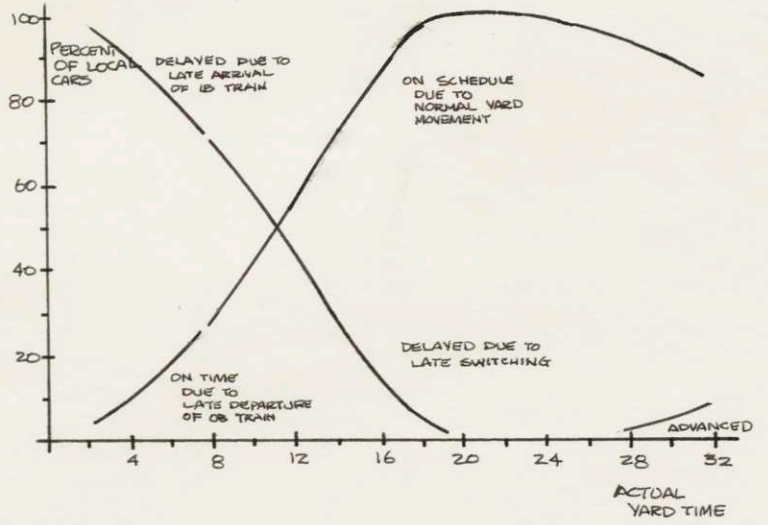






YARD TIME VS. CAR MOVEMENT PERFORMANCE: EASTBOUND LOADED CARS AND WESTBOUND EMPTY CARS
Figure 7





YARD TIME VERSUS CAR MOVEMENT PERFORMANCE: LOCAL CARS
Figure 8

yard handling (primarily for cars with an AYT of less than five hours) or due to the late departure of the outbound train (for cars with an AYT between five and seven hours).

2. This expedited handling of some eastbound trains, and the holding of outbound trains, not only returns much traffic to schedule, but also results in a larger number of eastbound cars moving in advance of schedule than westbound cars.

3. Delays due to late switching, and hence, on-schedule performance of cars with an AYT greater than eight hours, are largely the result of traffic priorities. Consequently, while eastbound loaded cars attain an on-schedule percentage of 90% for an AYT of eight hours and a SYT of fourteen hours, westbound empty cars attain this level of performance only at an AYT of fifteen hours and a SYT of twenty-two hours.

Local cars must necessarily interface with either inbound or outbound "main-line" trains, and hence the performance tables for these cars largely reflect the results found for eastbound or westbound through cars.

The composite tables of all loaded cars or all empty cars, while illustrative of general movement patterns, tend to obscure the comparisons possible with disaggregated samples.

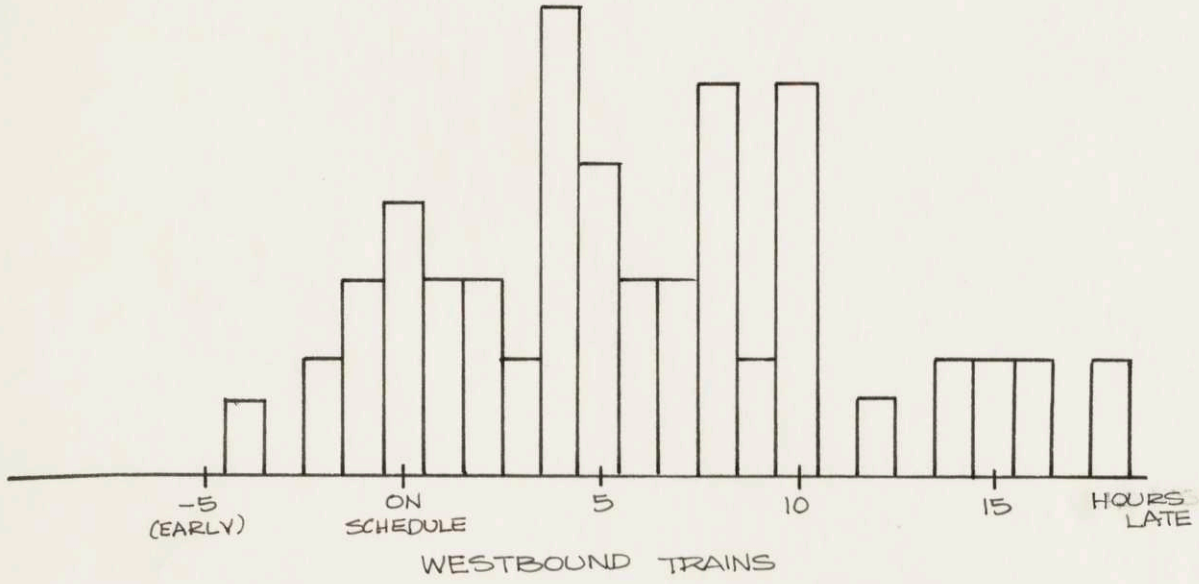
The overriding effect of delayed inbound trains upon the performance of short yard-time groups was unexpected. (Cars moving on-schedule due to expedited yard move or late departure, and most cars delayed by late switching, are so classified because of a late inbound arrival.) Not until scheduled yard time approaches twenty hours are late arrivals no longer a serious problem.

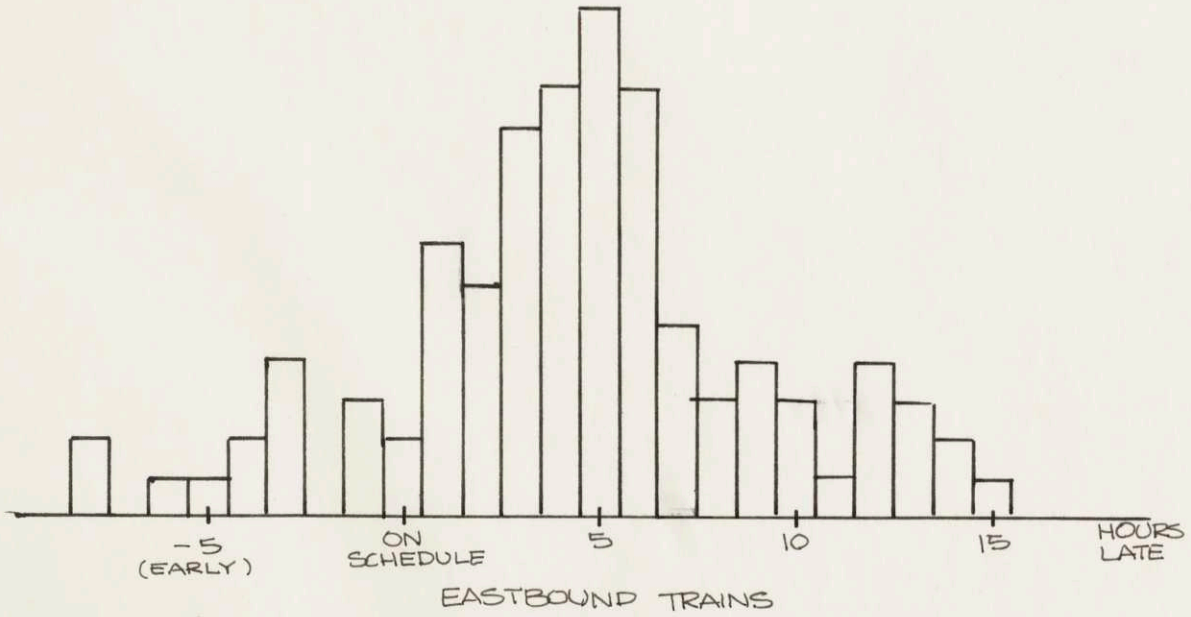
An analysis of the delays to arriving trains indicated that inbound trains characteristically exhibit long delay times, resulting in missed connections and late departures, and making efficient scheduling of yard operations impossible. The two figures below indicate the discrete and cumulative arrival distributions of inbound trains (broken down into eastbound and westbound trains) during the study period. The magnitude of inbound train delays is better understood by noting the following two points:

1. 50% of all eastbound trains arrive more than four hours late; and 50% of all westbound trains arrive more than five hours late; and

2. 10% of all eastbound, and nearly one quarter of all westbound trains arrive more than ten hours late.

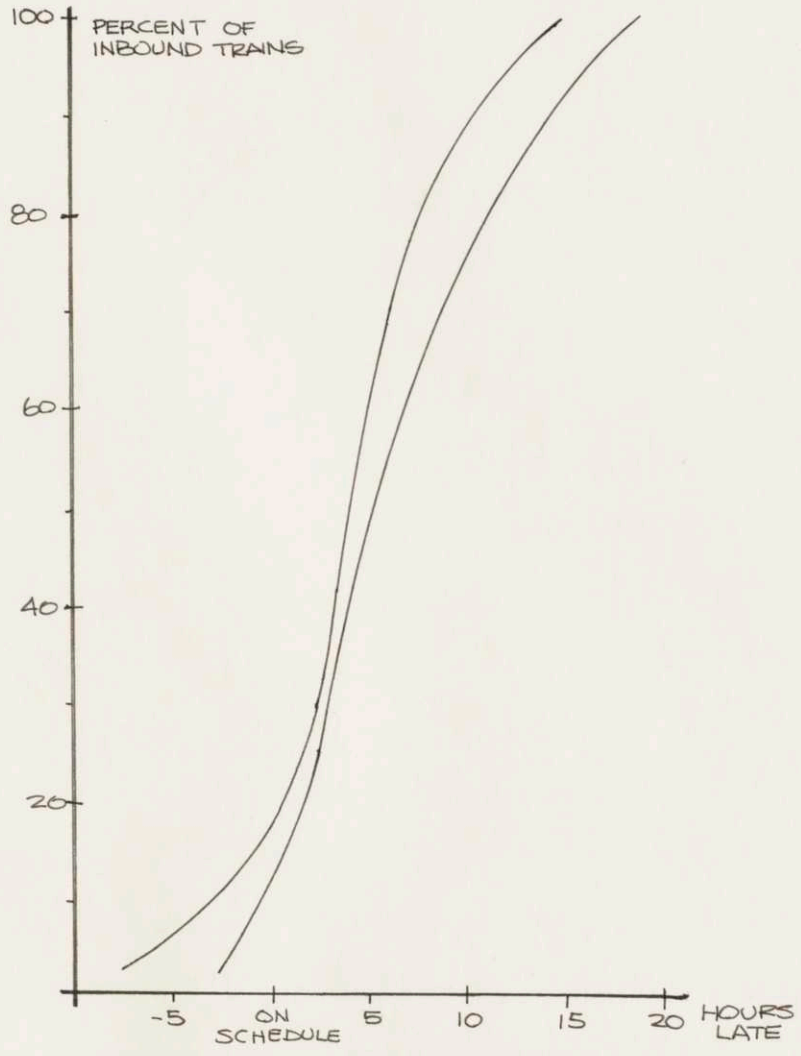
Some explanations for the erratic nature of train arrivals are presented in Section 4.3.





Discrete Distribution of Inbound Train Arrival Delays

Figure 9



Cumulative Distribution of Inbound Train Arrival Delays

Figure 10

CHAPTER IV

IMPLICATIONS OF STUDY RESULTS FOR RAILROAD OPERATING POLICIES

4.1 INTRODUCTION

The analysis of car movement performance has identified the major cause of unreliability as the wide disparity between scheduled and actual train performance. (The effects of late arrival or cancellation of inbound trains was discussed in sections 3.2 and 3.3. An example of the effect of outbound train cancellations was presented in section 3.3.3.) A discussion of the causes of, and possible solutions to, erratic train performance follows.

4.2 TRAIN CANCELLATIONS

It is clear from this study that the cancellation of trains because of a lack of resources (notably, locomotives and cabooses) is a major cause of erratic performance. Trains held in their originating yard can be expected to arrive late at their destinations. The late arrival of one train can cause delays to connecting trains, even though resources are available to move those trains. Trains which are not run at all can delay trains at other locations for lack of resources. As a result, train movements become traffic responsive (e.g. the number of loaded cars on each train determining which train will

run) and only loosely follow schedules.

A lack of resources implies that shortages occur throughout the network. However, rail networks often exhibit a cyclic pattern of resource shortages, with shortages progressing across the railroad from one end to the other during the cycle. This pattern implies that the resource problem may be one not so much of scarcity, but of distribution.

One alternative is the strict compliance of train movements to schedules. Unfortunately, schedules are presently so designed as to make strict adherence at best extremely costly, at worst, impossible. The major problem arises from the inbalances built into the schedules - the numbers of trains scheduled into and out of terminals are seldom equal, and over many rail links the numbers of trains in each direction do not balance. Naturally, any ensuing deficit of resources at a terminal must result in cancelled trains.

Train movement inbalance also requires that physical and human resources be transferred from points of surplus to points of deficit. Since crews are paid the same rate whether moving a train or deadheading to another terminal, and since locomotive operating costs are primarily dependent upon the ton-miles produced (and not the number

the number of trains run), there appears to be little possible justification for any inbalance in the number of train movements on links or into and out of terminals. (Even the curtailment of service on weekends appears to only be justified if balancing curtailments are possible in the reverse direction.)

The benefits accruing from a tightly controlled scheduling policy are not limited to a reduction in the number of trains delayed (or cancelled) due to resource limitations. As discussed in section 3.3.2 trains are often cancelled due to fluctuations in traffic volume, often resulting in delays not only to cars for that train but cars arriving later as well. A second result of train cancellations is the accentuating of traffic fluctuations for future yards - other trains may be cancelled for lack of traffic, or excessive demands (when a train is run the next day) may require traffic be left behind in the terminal. Thus, a "no-cancellation" policy would substantially reduce the need to drop cars because of excessive traffic and to run extra trains.

4.3 LATE TRAIN ARRIVALS

Up to this point, the discussion has revolved around the problem of train cancellations and delays due to resource limitations. Another problem is the irregular

performance of trains over road links. It became clear during the study that schedules for several trains were entirely unrealistic - arrival times for some trains were never within six or eight hours of schedule. Random delays, while explaining irregularities between the performance of trains on consecutive days, do not explain average delays of this magnitude. Two explanations for the very late arrival of trains at terminals follow:

1. Trains are delayed at their originating terminal (and thus arrive late at destinations even though no delays are encountered en route). An analysis of outbound train performance during this study adds weight to this hypothesis - the average delay in leaving the terminal for eastbound trains was 3.2 hours; for westbound trains, over 9 hours. Of the 15 trains regularly operated each day, 5 trains (4 of which were westbounds) had a minimum departure delay (for the entire study period) of more than 5 hours. (That westbound trains suffered high departure delays indicates that a lack of resources, and not the holding of trains for late arriving cars, is the cause of major terminal delays.)

2. Train schedules exhibit little relation to the amount of yard work a train performs en route - schedules are not amended to reflect changes in traffic blocks

handled, yard work performed, and in some cases, changes in the route of the train. The result is that over many routes trains making two, and sometimes three, stops are scheduled for less time than trains making no stops. Differences in yard layouts and train priorities can not explain inconsistencies of this magnitude. (Priority and drag freight trains have been excluded from this analysis.)

Thus, it appears that limited resources (locomotives and crews) are a major factor in both train cancellations and the late arrival of trains at terminals. Since these two factors account (directly or indirectly) for a vast majority of car delays, large reductions in transit time unreliability will result from a solution to resource limitations (through either the redistribution or the procurement of locomotives and crews).

CHAPTER V

SUMMARY AND CONCLUSIONS

5.1 INTRODUCTION

This study was initiated to provide additional insight into the nature of rail freight transit time unreliability. The investigation centered on four areas:

1. The relationship of car movement performance through terminals to total transit time unreliability;

2. the causes of car delays in terminals;

3. the causal relationship between car movement performance and yard time parameters; and

4. the implications of the study findings for railroad operating policies.

5.2 SUMMARY

During its journey through a rail network, a car is consecutively aggregated with other traffic to form a train, moved to the next yard, switched, reaggregated, and so on until the car reaches its destination. Because of the serial nature of this process, even a low probability of delay at each terminal can result in wide dispersions in total transit time.

The analysis of car movement performance through a terminal produced the following major findings:

1. One-third of all loaded cars and two-thirds of all empty cars miss their scheduled outbound train connection.

2. Over two-thirds of all car delays are the result of the cancellation of outbound trains or the holding of cars in yards because of limitations on train capacity.

3. Cars which must be repaired, cars which are placed on an incorrect outbound train, and cars which are held because they lack destination information - delay types often sited as major causes of unreliability - account for only five percent of all car delays.

An investigation of the relation of yard time parameters to car movement performance revealed the overriding effect of late train arrivals upon the probability of a car's being available for its outbound connection. Because late trains often arrive out of phase with yard operations, cars on late trains often miss not only "tight" connections but also outbound trains which depart from the yard 12 to 15 hours after the actual arrival of the inbound train.

5.3 CONCLUSIONS

The results of this study indicate major reductions in transit time unreliability will only result from the improved consistency of line haul train operation. The erratic nature of train movements (both cancellations and late arrivals at terminals) appears to be the result of three factors:

1. scarcity, or poor distribution, of locomotives and crews;

2. poor scheduling; and

3. operating policies which attempt to minimize direct operating costs without regard to car movement performance.

5.4 FUTURE STUDY

Future research into car movement performance through terminals should be centered in two areas. First, the results of this study should be verified through the analysis of additional rail terminals. Second, resource utilization and the economics of train cancellation should be investigated if the rail unreliability problem is to be resolved.

APPENDIX I

A COMPUTER PROGRAM TO ANALYZE YARD CAR MOVEMENT RELIABILITY

OBJECTIVE

The program is designed to aid the analysis of rail car movement unreliability. The program computes on-schedule performance, classifies delays into three categories, and tables movement performance versus scheduled and actual yard time.

GENERAL CONSIDERATIONS

Throughout the development of this program, two considerations were paramount:

1. Core requirements for the program approach 150,000 bites. Reducing the number of car movement classifications or the number of trains analyzed in each run can reduce core requirements to the 128,000 bite capacity standard on many second generation computers. (These alternatives will be discussed in more detail below.)

2. The performance of both the yard and the trains entering and leaving the yard have a major effect upon the logic and structure of the program. Without prior knowledge of either of these factors, the program, of necessity, was designed to handle major irregularities in yard or train performance.

INPUT STRUCTURE

Three groups of input are necessary for the running of this program:

1. A listing of scheduled inbound and outbound trains, and their scheduled arrival, or departure, time;

2. A listing of the closest outbound connection for each inbound train;

3. Inbound and outbound train data (symbol, actual arrival or departure time) for each car.

As mentioned above, this program is designed to classify car movements based upon scheduled performance. A first impulse, and - if certain conditions are met - often a correct one, is to develop a connection table listing the scheduled inbound connections for each outbound train.[1] The difficulty with this approach lies in

[1] A connection table could be developed as follows:
a. List of inbound trains (and their scheduled arrival time)
b. List of outbound trains, associated with each the latest connecting inbound train.
c. With extra trains (inbound) scheduled arrival would be set equal to actual arrival time and car performance determined based on the relation of this arrival time to the closest connection of the nex arriving (time-wise) inbound train.
d. Outbound extra trains would be assigned the latest inbound connection of the nearest earlier scheduled outbound train.

the necessary underlying assumptions:

1. Inbound (and outbound) trains consistently arrive at (and depart from) the yard close enough[1] to schedule that the program can determine which day's train the car is on. For example, if an inbound train is scheduled to arrive at 6PM and actually arrives at noon, is the train six hours early or eighteen hours late?

2. Actual train movements are consistent with schedules, e.g., a train scheduled to leave at 2AM is not actually leaving at 4PM and receiving additional traffic.

3. Symbols for trains are unique and all trains with symbols which are not listed in schedules are truly extras with no scheduled arrival (or departure) time.

4. Train symbols associated with car data are correctly recorded. (If the true train symbol is AB1 and the train is incorrectly recorded as AC1, the train will be assumed to be an extra train (with no scheduled arrival time).

---

[1] As long as a consistent rule can be applied to all inbound or outbound trains, train delays are not a serious problem. For example, if the maximum delay is 18 hours, and the earliest train arrival or departure is 6 hours, then this rule can be applied to all train times to determine scheduled arrival (or departure) day.

When these assumptions are invalid - as in the data set used for this study - a second approach is necessary. Each train in the data sample is listed, along with that train's actual and scheduled arrival (or departure) time. The structure of this input will be detailed below.

REMOVING NON-SWITCH CARS

The data set used in this analysis included cards for not only those cars switched in the terminal, but also cabooses, cars on through trains, and block-switched cars. Cabooses were rejected by a check on the car type. (In the sample, cabooses were indicated by a "z" in the car-type column.) Through cars were rejected by checking the actual time of the car in the yard (actual departure time minus actual arrival time) against a minimum "switch time". For this study, all cars with a yard time of less than five hours were rejected as through cars. Some through cars are accepted using this approach (no cars actually switched in the yard were rejected), the number of misclassifications - less than .5% of all cars - is too small to justify the construction of a table of through trains and block-switched train pairs. Only when a satisfactory cut-off time is impossible should a table be constructed.

LOCATION OF INBOUND AND OUTBOUND TRAIN SYMBOLS

The program searches the input list of outbound trains, and their associated actual and scheduled departure time to find a match (of both symbol and actual time) with the outbound train data on the card. If a match is recorded, the location of that outbound train on the input list is assigned to the car. If no match is found, the car's initial, number, destination, and inbound and outbound train (symbol and time) is listed with an associated error message "INVALID TRAIN SYMBOL". This message provides a check against mispunched input data.

As noted above, the number of inbound trains (symbol, actual and scheduled arrival time) must be limited to minimize core requirements. (The maximum number of inbound trains is 100.) Those inbound trains which, because of the delay in leaving the yard, must necessarily have carried only cars delayed due to cancellation or "other" reasons, are not listed. Cars which are not necessarily delayed (decision rule: yard time less than 48 hours) are matched with the input data just as with outbound trains. Cars which are delayed are handled as follows:

1. The input list of inbound train symbols is surveyed for a match with the inbound symbol for the car.

2. If a match is found, the car is assigned the

scheduled arrival hour (but not day) of the matched symbol for future calculations.

3. If no symbol match is located, the car is listed with the accompanying message - "DELAY - INVALID IB SYM" - and rejected. The number of cars so classified is less than .3%.

CAR MOVEMENT

Nine car movement classes are used in this program:

A. Cars moving in advance of their scheduled connection due to:

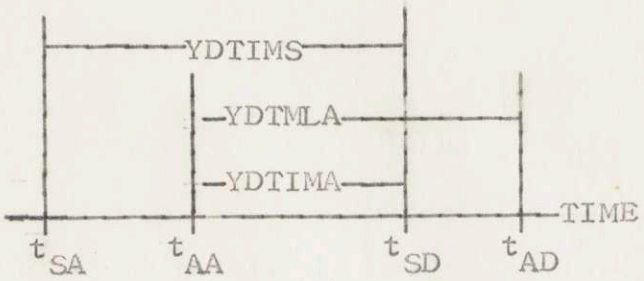
1. Early arrival of the inbound train (EARLY ARR)
2. Expedited movement through the terminal (YARD MOVE)
3. Late departure of the outbound train (LATE DEP)

B. Cars making scheduled connection due to:

1. Normal yard performance (NORMAL)
2. Expedited yard performance (YARD MOVE)
3. Late departure of the outbound train (LATE DEP)

C. Cars missing their scheduled connection due to:

1. Late arrival of the inbound train (LATE ARR)
2. The outbound train's not carrying that car's classification block, or not running (OB BUILDUP)
3. Other reasons (including rips, no-bills, and empty cars being cleaned) (OTHER)



YDTIMS: Scheduled Yard Time
YDTIMA: Actual Yard Time
YDTMLA: Late Arrival Yard Time

t_{SA}: Scheduled Arrival of Inbound Train

t_{AA}: Actual Arrival of Inbound Train

t_{SD}: Scheduled Departure of Outbound Train

t_{AD}: Actual Departure of Outbound Train

Cars are classified as follows:

YDTIMA (IN HOURS) \ YDTIMS (IN HOURS)	0 – 7	8 – 31	32
0 – 7	ADVANCED-YARD MOVE OR LATE DEP[1]	ON TIME-YARD MOVE OR LATE DEP[1]	DELAYED-LATE ARR
8	ADVANCED-EARLY ARRIVAL	ON TIME-NORMAL	DELAYED-OB BUILDUP OR OTHER

[1] A car is classified as "due to late departure" if YDTMLA is greater than seven hours. Otherwise, the car is classified as "due to expedited yard move".

There is no analytic method to distinguish between cars delayed due to outbound train cancellation or other reason (rips, no-bills, etc). The heuristic rule used in this program was to classify cars as "due to outbound buildup" if YDTIMA was less than 78 hours. While resulting in some misclassifications, this rule correctly classified over 90% of all cars in these categories. (It should be noted that all cars in these categories are listed to enable a manual check of classifications and to identify cars actually "delayed due to late switching".)

OUTPUT

To provide meaningful results, all YDTIMS and YDTIMA values are corrected (by subtracting the proper number of days) so that YDTIMS falls within the 8 to 31 hour range of published schedules. If a delayed car has for example YDTIMS = 65 hours and YDTIMA = 58 hours (the inbound train arrived seven hours late), 2x24 = 48 hours would be subtracted from each parameter, yielding YDTIMS = 17 hours, and YDTIMA = 10 hours.

In addition, each car is classified as either eastbound, westbound or local, based upon the structure of the input listing of inbound and outbound trains:

1. If the IB symbol location is between 70 and 100,

the car is classified as "local".

2. Otherwise, the outbound train location determines the classification: 1 through 15, eastbound; 16 through 30, westbound; and 31 through 45 local. (Outbound train symbols are restricted to 45 entries.)

Three outputs are produced from the program:

1. A listing of all cars (including destination and IB and OB train information) classified as "Delay due to OB buildup", and "Delay due to other reasons", and all cars rejected as "Invalid Train Symbol" or "Delay - Invalid IB Symbol". This listing allows a manual check of the correctness of input train listings and the classification of delayed cars.

2. An inbound-to-outbound train mapping of all cars moving in advance of schedule, on schedule or delayed due to late arrival. This table identifies major connections and indicates the performance of cars on individual trains.

3. Sixteen tables of car movement performance versus scheduled and actual yard time. The output for this table is also punched on cards to provide input for the summary program.

SUMMARY PROGRAM

The restrictions on the number of inbound and outbound trains which could be listed in the main program

made it impossible to use more than one day's data for each run. A second program takes the output of NDAYS punched output from the main program, adds the proper figures from each table and recalculates percentage performance.

The performance of cars delayed due to late switching and any corrections to the classification of "OB BUILDUP" or "OTHER" delays must be manually added to the cards output from the main program. As constructed, input for this program must be arranged such that the NDAYS cards for each row are grouped together instead of the total punch output of each run from the main program being input as a block.

APPENDIX II

LISTING OF MAIN PROGRAM

```
      REAL*8 CONTNT,OFFJUN,ONJUN,CARNUM                                 0001
      REAL LORE,NETONS,CARDES(3),IBSYM,ZBLANK/'Z '/,E/'E'/,IBSARR(100)/ 0002
     1100*' '/,OBSDEP(45)/45*' '/                                       0003
      INTEGER*2 YDTIME,IBHARR(100)/100*0/,IBDARR(100)/100*0/,           0004
     1OBHDEP(45)/45*0/,OBDDEP(45)/45*0/,OBSLOC,IBSLOC,OBHACT(45),       0005
     2OBDACT(45),IBHACT(100),IBDACT(100),OBHSCH,IBHSCH,OBDSCH,IBDSCH,   0006
     3YDTIMS,YDTMLA,MOVLE,OTLTCT(45,100)/4500*0/,OBHOLL(45)/45*0/,      0007
     4OBOTLL(45)/45*0/,OBOTLE(45)/45*0/,LATCT (45,100)/4500*0/,         0008
     5OBLATL(45)/45*0/,OBLATE(45)/45*0/,TOTLD/0/,TOTEMP/0/,             0009
     6TDCOLE(18)/18*0/,TDCOLW(18)/18*0/,TDCOLL(18)/18*0/,TLDXD,TEMPXD,  0010
     7L(33,9)/297*0/,TROW,TOTAL,IPC(33,9)/297*0/,Y,IF/0/,LOAD,EMPTY,    0011
     8DELAYI,TIBOB(45,100)/4500*0/,YDTIMA,ADVECT(45,100)/4500*0/,       0012
     9OBADEL(45)/45*0/                                                  0013
      INTEGER*2 OBHOLE(45)/45*0/,OBOTHL(45)/45*0/,OBOTHE(45)/45*0/,     0014
     1TOBL(45)/45*0/,TOBE(45)/45*0/,OBHR,OBDAY,DELAY,TCOL(18)/18*0/,    0015
     2OBADEE(45)/45*0/,ADVYCT(45,100)/4500*0/,OBADYL(45)/45*0/,         0016
     3OBADYE(45)/45*0/,ADVLCT(45,100)/4500*0/,OBADLL(45)/45*0/,         0017
     4OBADLE(45)/45*0/,OTNCT(45,100)/4500*0/,OBOTNL(45)/45*0/,          0018
     5OBOTNE(45)/45*0/,OTYDCT(45,100)/4500*0/,OBOTYL(45)/45*0/,         0019
     6SPERW(31,18)/558*0/,APERW(33,18)/594*0/,SPERE(31,18)/558*0/,      0020
     7APERE(33,18)/594*0/,SPERL(31,18)/558*0/,APERL(33,18)/594*0/,      0021
     8SPERF(31,18)/558*0/,APERF(33,18)/594*0/,PSPER(31,18)/558*0/,      0022
     9OBOTYE(45)/45*0/                                                  0023
      WRITE(6,11)                                                       0024
11    FORMAT('1',   'SELKIRK:  FEBRUARY 22,1971'/)                      0025
C***  READ THE INBOUND TRAINS                                           0026
      READ(5,17)((IBSARR(J),IBHACT(J),IBDACT(J),IBHARR(J),IBDARR(J)),   0027
     1J=1,100)                                                          0028
17    FORMAT(5(A4,4I2))                                                 0029
C***  READ THE LISTING FOR OUTBOUND TRAINS                              0030
      READ(5,17)((OBSDEP(J),OBHACT(J),OBDACT(J),OBHDEP(J),OBDDEP(J)),   0031
     1J=1,45)                                                           0032
C***  READ THE INPUT DATA CARDS                                         0033
100   READ(9,1,END=500)CHAR,CARINT,CARNUM,LORE,CARTYP,NETONS,CONTNT,    0034
     1CARDES,OFFJUN,ONJUN,IBSYM,IBHR,IBDAY,OBSYM,OBHR,OBDAY             0035
1     FORMAT(A1,A4,A6,A1,A2,A3,A6,2A4,A3,9X,2A8,5X,2(A4,2I2))           0036
```

```
      IF=0                                                                0037
C***  IF THIS CAR IS A CABIN CAR (CARTYP='Z '), SKIP TO NEXT CARD         0038
      IF (CARTYP.EQ.ZBLANK)GO TO 100                                      0039
C***  IF THIS CAR IS ON A THRU TRAIN OR IS BLOCK SWITCHED, SKIP TO THE    0040
C***  NEXT CARD (DECISION RULE-TIME IN YARD IS LESS THAN 4 HOURS)         0041
      YDTIMA=24*(OBDAY-IBDAY)+(OBHR-IBHR)                                 0042
      IF (YDTIMA.LT.4)GO TO 100                                           0043
      IF(YDTIMA.GE.48)GO TO 5                                             0044
C***  FIND THE LOCATION IN INPUT OF INBOUND AND OUTBOUND TRAIN SYMBOLS    0045
      DO 4 J=1,100                                                        0046
      IF(IBHARR(J).EQ.25)GO TO 545                                        0047
      IF(IBSYM.NE.IBSARR(J).OR.IBHR.NE.IBHACT(J).OR.IBDAY.NE.IBDACT(J))   0048
     1GO TO 4                                                             0049
      IBSLOC=J                                                            0050
      GO TO 5                                                             0051
4     CONTINUE                                                            0052
      GO TO 545                                                           0053
5     DO 6 J=1,45                                                         0054
      IF(OBHDEP(J).EQ.25)GO TO 545                                        0055
      IF(OBSYM.NE.OBSDEP(J).OR.OBHR.NE.OBHACT(J).OR.OBDAY.NE.OBDACT(J))   0056
     1GO TO 6                                                             0057
      OBSLOC=J                                                            0058
      IF(YDTIMA.GE.48)GO TO 351                                           0059
      GO TO 8                                                             0060
6     CONTINUE                                                            0061
545   WRITE(6,2) CHAR,CARINT,CARNUM,LORE,CARTYP,NETONS,CONTNT,CARDES,     0062
     1OFFJUN,ONJUN,IBSYM,IBHR,IBDAY,OBSYM,OBHR,OBDAY                      0063
2     FORMAT(2X,'INVALID TRAIN SYMBOL',5X,A1,A4,A6,A1,A2,A3,A6,2A4,A3,    0064
     19X,2A8,5X,2(A4,2I2))                                                0065
      GO TO 100                                                           0066
351   DO 352 J=1,100                                                      0067
      IF(IBSYM.NE.IBSARR(J))GO TO 352                                     0068
      IBSLOC=J                                                            0069
      IF=1                                                                0070
      GO TO 802                                                           0071
352   CONTINUE                                                            0072
```

```
      WRITE(6,9) CHAR,CARINT,CARNUM,LORE,CARTYP,NETONS,CONTNT,CARDES,
     1OFFJUN,ONJUN,IBSYM,IBHR,IBDAY,OBSYM,OBHR,OBDAY
9     FORMAT(2X,'DELAY-INVALID IB SYM',5X,A1,A4,A6,A1,A2,A3,A6,2A4,A3,
     19X,2A8,5X,2(A4,2I2))
      GO TO 100
C***  DEFINE SCHEDULED ARRIVAL DAY
8     IBHSCH=IBHARR(IBSLOC)
      IBDSCH=IBDARR(IBSLOC)
C***  DEFINE SCHEDULED DEPARTURE DAY
      OBHSCH=OBHDEP(OBSLOC)
      OBDSCH=OBDDEP(OBSLOC)
C***  DEFINE SCHEDULED YARD TIME (YDTIMS), ACTUAL ARRIVAL TO SCHEDULED
C***  DEPARTURE YARD TIME(YDTMLA), AND ACTUAL YARD TIME (YDTIMA)
      YDTIMS=24*(OBDSCH-IBDSCH)+(OBHSCH-IBHSCH)
      YDTIME=24*(OBDSCH-IBDAY)+(OBHSCH-IBHR)
C***  DETERMINE CAR MOVEMENT PERFORMANCE
      IF(YDTIMS.LE.31)GO TO 800
      IF(YDTIME.LE.31)GO TO 170
802   IF(YDTIMA.LT.78)GO TO 180
      GO TO 215
800   IF(YDTIMS.LT.8)GO TO 801
      IF(YDTIME.GE.8)GO TO 90
      IF(YDTIMA.LT.8)GO TO 212
      GO TO 210
801   IF(YDTIME.GE.8)GO TO 15
      IF(YDTIMA.LT.8)GO TO 13
      GO TO 19
C***  CAR ADVANCED OUT TO EARLY ARRIVAL OF IB TRAIN
15    IF(LORE.EQ.E)GO TO 16
      ADVECT(OBSLOC,IBSLOC)=ADVECT(OBSLOC,IBSLOC)+100
      OBADEL(OBSLOC)=OBADEL(OBSLOC)+1
      MOVLE=1
      GO TO 101
16    ADVECT(OBSLOC,IBSLOC)=ADVECT(OBSLOC,IBSLOC)+1
      OBADEE(OBSLOC)=OBADEE(OBSLOC)+1
      MOVLE=2
```

```
      GO TO 102                                                          0109
C***  CAR WAS ADVANCED DUE TO EXPEDITED YARD MOVEMENT                    0110
13    IF(LORE.EQ.E)GO TO 18                                              0111
      ADVYCT(OBSLOC,IBSLOC)=ADVYCT(OBSLOC,IBSLOC)+100                    0112
      OBADYL(OBSLOC)=OBADYL(OBSLOC)+1                                    0113
      MOVLE=3                                                            0114
      GO TO 101                                                          0115
18    ADVYCT(OBSLOC,IBSLOC)=ADVYCT(OBSLOC,IBSLOC)+1                      0116
      OBADYE(OBSLOC)=OBADYE(OBOLOC)+1                                    0117
      MOVLE=4                                                            0118
      GO TO 102                                                          0119
C***  CAR WAS ADVANCED DUE TO LATE DEPARTURE OF OB TRAIN                 0120
19    IF(LORE.EQ.E)GO TO 20                                              0121
      ADVLCT(OBSLOC,IBSLOC)=ADVLCT(OBSLOC,IBSLOC)+100                    0122
      OBADLL(OBSLOC)=OBADLL(OBSLOC)+1                                    0123
      MOVLE=5                                                            0124
      GO TO 101                                                          0125
20    ADVLCT(OBSLOC,IBSLOC)=ADVLCT(OBSLOC,IBSLOC)+1                      0126
      OBADLE(OBSLOC)=OBADLE(OBSLOC)+1                                    0127
      MOVLE=6                                                            0128
      GO TO 102                                                          0129
C***  CAR MADE PROPER CONNECTION DUE TO NORMAL YARD HANDLING             0130
90    IF(LORE.EQ.E)GO TO 165                                             0131
      OTNCT(OBSLOC,IBSLOC)=OTNCT(OBSLOC,IBSLOC)+100                      0132
      OBOTNL(OBSLOC)=OBOTNL(OBSLOC)+1                                    0133
      MOVLE=7                                                            0134
      GO TO 101                                                          0135
165   OTNCT(OBSLOC,IBSLOC)=OTNCT(OBSLOC,IBSLOC)+1                        0136
      OBOTNE(OBSLOC)=OBOTNE(OBSLOC)+1                                    0137
      MOVLE=8                                                            0138
      GO TO 102                                                          0139
C***  CAR MADE PROPER CONNECTION DUE TO EXPEDITED YARD MOVEMENT          0140
212   IF(LORE.EQ.E)GO TO 213                                             0141
      OTYDCT(OBSLOC,IBSLOC)=OTYDCT(OBSLOC,IBSLOC)+100                    0142
      OBOTYL(OBSLOC)=OBOTYL(OBSLOC)+1                                    0143
      MOVLE=9                                                            0144
```

```
      GO TO 101                                                          0145
213   OTYDCT(OBSLOC,IBSLOC)=OTYDCT(OBSLOC,IBSLOC)+1                      0146
      OBOTYE(OBSLOC)=OBOTYE(OBSLOC)+1                                    0147
      MOVLE=10                                                           0148
      GO TO 102                                                          0149
C***  CAR MADE PROPER CONNECTION DUE TO LATE OB DEPARTURE                0150
210   IF(LORE.EQ.E)GO TO 211                                             0151
      OTLTCT(OBSLOC,IBSLOC)=OTLTCT(OBSLOC,IBSLOC)+100                    0152
      OBOTLL(OBSLOC)=OBOTLL(OBSLOC)+1                                    0153
      MOVLE=11                                                           0154
      GO TO 101                                                          0155
211   OTLTCT(OBSLOC,IBSLOC)=OTLTCT(OBSLOC,IBSLOC)+1                      0156
      OBOTLE(OBSLOC)=OBOTLE(OBSLOC)+1                                    0157
      MOVLE=12                                                           0158
      GO TO 102                                                          0159
C***  CAR WAS DELAYED DUE TO LATE ARRIVAL OF INBOUND TRAIN               0160
170   IF(LORE.EQ.E)GO TO 175                                             0161
      LATCT (OBSLOC,IBSLOC)=LATCT (OBSLOC,IBSLOC)+100                    0162
      OBLATL(OBSLOC)=OBLATL(OBSLOC)+1                                    0163
      MOVLE=13                                                           0164
      GO TO 101                                                          0165
175   LATCT (OBSLOC,IBSLOC)=LATCT (OBSLOC,IBSLOC)+1                      0166
      OBLATE(OBSLOC)=OBLATE(OBSLOC)+1                                    0167
      MOVLE=14                                                           0168
      GO TO 102                                                          0169
C***  CAR WAS DELAYED - HELD FOR BUILDUP OF OUTBOUND EXTRA TRAIN         0170
180   IF(YDTIMA.GE.78)GO TO 215                                          0171
      WRITE(6,89)CHAR,CARINT,CARNUM,LORE,CARTYP,NETONS,CONTNT,CARDES,    0172
     1OFFJUN,ONJUN,IBSYM,IBHR,IBDAY,OBSYM,OBHR,OBDAY                     0173
89    FORMAT(2X,'DELAY-OB BUILDUP    ',5X,A1,A4,A6,A1,A2,A3,A6,2A4,A3,   0174
     19X,2A8,5X,2(A4,2I2))                                              0175
      IF(LORE.EQ.E)GO TO 184                                             0176
      OBHOLL(OBSLOC)=OBHOLL(OBSLOC)+1                                    0177
      MOVLE=15                                                           0178
      GO TO 778                                                          0179
184   OBHOLE(OBSLOC)=OBHOLE(OBSLOC)+1                                    0180
```

```
      MOVLE=16                                                          0181
      GO TO 779                                                         0182
C***  CAR WAS DELAYED FOR OTHER REASONS                                 0183
215   WRITE(6,3)CHAR,CARINT,CARNUM,LORE,CARTYP,NETONS,CONTNT,CARDES,    0184
     1OFFJUN,ONJUN,IBSYM,IBHR,IBDAY,OBSYM,OBHR,OBDAY                    0185
3     FORMAT(2X,'UNEXPLAINED DELAY',8X,A1,A4,A6,A1,A2,A3,A6,2A4,A3,9X,  0186
     12A8,5X,2(A4,2I2))                                                 0187
      IF(LORE.EQ.E)GO TO 201                                            0188
      OBOTHL(OBSLOC)=OBOTHL(OBSLOC)+1                                   0189
      MOVLE=17                                                          0190
      GO TO 778                                                         0191
201   OBOTHE(OBSLOC)=OBOTHE(OBSLOC)+1                                   0192
      MOVLE=18                                                          0193
      GO TO 779                                                         0194
C***  OUTPUT VARIABLES INCLUDING COUNT                                  0195
101   TLDXD=TLDXD+1                                                     0196
      TIBOB (OBSLOC,IBSLOC)=TIBOB (OBSLOC,IBSLOC)+100                   0197
778   TOTLD=TOTLD+1                                                     0198
      TOBL(OBSLOC)=TOBL(OBSLOC)+1                                       0199
      GO TO 103                                                         0200
102   TEMPXD=TEMPXD+1                                                   0201
      TIBOB (OBSLOC,IBSLOC)=TIBOB (OBSLOC,IBSLOC)+1                     0202
779   TOTEMP=TOTEMP+1                                                   0203
      TOBE(OBSLOC)=TOBE(OBSLOC)+1                                       0204
103   TCOL(MOVLE)=TCOL(MOVLE)+1                                         0205
      IF(IF.EQ.1)GO TO 354                                              0206
      IF(YDTIMS.LE.7)GO TO 955                                          0207
      IF(YDTIMS.LE.31)GO TO 903                                         0208
      IF(YDTIMS.LE.55)GO TO 951                                         0209
      IF(YDTIMS.LE.79)GO TO 952                                         0210
      YDTIMS=31                                                         0211
      YDTIME=33                                                         0212
      GO TO 904                                                         0213
955   YDTIMS=YDTIMS+24                                                  0214
      YDTIME=YDTIME+24                                                  0215
      GO TO 903                                                         0216
```

```
951   YDTIMS=YDTIMS-24                                                    0217
      YDTIME=YDTIME-24                                                    0218
      GO TO 903                                                           0219
952   YDTIMS=YDTIMS-48                                                    0220
      YDTIME=YDTIME-48                                                    0221
903   IF(YDTIME.LE.31)GO TO 104                                           0222
      IF(YDTIME.GE.35)GO TO 905                                           0223
      YDTIME=32                                                           0224
      GO TO 104                                                           0225
905   YDTIME=33                                                           0226
104   IF (YDTIMS.GE.8)GO TO 131                                           0227
      YDTIMS=8                                                            0228
131   IF(YDTIME.GE.1)GO TO 904                                            0229
      YDTIME=1                                                            0230
904   SPERF (YDTIMS,MOVLE)=SPERF (YDTIMS,MOVLE)+1                         0231
      APERF (YDTIME,MOVLE)=APERF (YDTIME,MOVLE)+1                         0232
354   IF(OBSLOC.GE.31.OR.IBSLOC.GE.71)GO TO 921                           0233
      IF(OBSLOC.LT.16.OR.OBSLOC.GE.44)GO TO 920                           0234
      TDCOLW(MOVLE)=TDCCLW(MOVLE)+1                                       0235
      IF(IF.EQ.1)GO TO 100                                                0236
      SPERW (YDTIMS,MOVLE)=SPERW (YDTIMS,MOVLE)+1                         0237
      APERW (YDTIME,MOVLE)=APERW (YDTIME,MOVLE)+1                         0238
      GO TO 100                                                           0239
920   TDCOLE(MOVLE)=TDCOLE(MOVLE)+1                                       0240
      IF(IF.EQ.1)GO TO 100                                                0241
      SPERE (YDTIMS,MOVLE)=SPERE (YDTIMS,MOVLE)+1                         0242
      APERE (YDTIME,MOVLE)=APERE (YDTIME,MOVLE)+1                         0243
      GO TO 100                                                           0244
921   TDCOLL(MOVLE)=TDCOLL(MOVLE)+1                                       0245
      IF(IF.EQ.1)GO TO 100                                                0246
      SPERL (YDTIMS,MOVLE)=SPERL (YDTIMS,MOVLE)+1                         0247
      APERL (YDTIME,MOVLE)=APERL (YDTIME,MOVLE)+1                         0248
      GO TO 100                                                           0249
C***  FINAL OUTPUT-INBOUND TO OUTBOUND MAPPING                            0250
500   WRITE(6,11)                                                         0251
      WRITE(6,980)                                                        0252
```

```
980   FORMAT(1X,'PERFORMANCE OF CARS MOVING BETWEEN GIVEN INBOUND AND OU
     1TBOUND TRAINS'//)
      N=5
      WRITE(6,981)
981   FORMAT(1X,'OUTBOUND TRAIN'/2X,'SYMB',3X,'SCH DEP',1X,'ACT DEP',1X,
     1'DELAY'/11X,'HR',1X,'DAY',2X,'HR',1X,'DAY',2X,'HRS'/4X,'INBOUND TR
     2AINS',17X,'CARS ADVANCED DUE TO:',8X,'CARS ON SCHEDULE DUE TO:',
     36X,'CARS DELAYED DUE TO:',11X,'ROW'/4X,'SYMB',1X,'SCH ARR',1X,
     4'ACT ARR',1X,'DELAY',1X,'EARLY ARR',1X,'YARD MOVE',2X,'LATE DEP',
     53X,'NORMAL',2X,'YARD MOVE',2X,'LATE DEP',2X,'LATE ARR',1X,'OB BUIL
     6DUP',2X,'OTHER',5X,'TOTALS'/10X,'HR',1X,'DAY',2X,'HR',1X,'DAY',2X,
     7'HRS',
     83X,'LDS',1X,'EMP',3X,'LDS',1X,'EMP',3X,'LDS',1X,'EMP',3X,
     9   'LDS',1X,'EMP',3X,'LDS',1X,'EMP',3X,'LDS',1X,'EMP',3X,
     1   'LDS',1X,'EMP',3X,'LDS',1X,'EMP',3X,'LDS',1X,'EMP',3X,
     2   'LDS',1X,'EMP'/)
      DO 609 J=1,45
      IF(N.LT.47)GO TO 834
      WRITE(6,11)
      WRITE(6,981)
      N=3
834   IF(TOBL  (J).EQ.0.AND.TOBE  (J).EQ.0)GO TO 609
      IF(OBHDEP(J).EQ.25)GO TO 700
      DELAY=24*(OBDACT(J)-OBDDEP(J))+(OBHACT(J)-OBHDEP(J))
      WRITE(6,821)OBSDEP(J),OBHDEP(J),OBDDEP(J),OBHACT(J),OBDACT(J),
     1DELAY,OBADEL(J),OBADEE(J),OBADYL(J),OBADYE(J),OBADLL(J),OBADLE(J),
     2OBOTNL(J),OBOTNE(J),OBOTYL(J),OBOTYE(J),OBOTLL(J),OBOTLE(J),
     3OBLATL(J),OBLATE(J),OBHOLL(J),OBHOLE(J),OBOTHL(J),OBOTHE(J),
     4TOBL(J),TOBE(J)
821   FORMAT(//  2X,A4,2X,5(2X,I2),3X,10(I3,1X,I3,3X)/)
      N=N+4
      DO 610 K=1,100
      IF(IBHARR(K).EQ.25)GO TO 600
      IF(TIBOB(J,K).EQ.0)GO TO 610
      LL1 =LOAD (ADVECT(J,K))
      LE1 =EMPTY(ADVECT(J,K))
```

```
      LL2 =LOAD (ADVYCT(J,K))                                                  0289
      LE2 =EMPTY(ADVYCT(J,K))                                                  0290
      LL3 =LOAD (ADVLCT(J,K))                                                  0291
      LE3 =EMPTY(ADVLCT(J,K))                                                  0292
      LL4 =LOAD (OTNCT (J,K))                                                  0293
      LE4 =EMPTY(OTNCT (J,K))                                                  0294
      LL5 =LOAD (OTYDCT(J,K))                                                  0295
      LE5 =EMPTY(OTYDCT(J,K))                                                  0296
      LL6 =LOAD (OTLTCT(J,K))                                                  0297
      LE6 =EMPTY(OTLTCT(J,K))                                                  0298
      LL7 =LOAD (LATCT (J,K))                                                  0299
      LE7 =EMPTY(LATCT (J,K))                                                  0300
      LL10=LOAD (TIBOB (J,K))                                                  0301
      LE10=EMPTY(TIBOB (J,K))                                                  0302
      DELAYI=24*(IBDACT(K)-IBDARR(K))+(IBHACT(K)-IBHARR(K))                    0303
      WRITE(6,822)IBSARR(K),IBHARR(K),IBDARR(K),IBHACT(K),IBDACT(K),           0304
     1DELAYI,LL1,LE1,LL2,LE2,LL3,LE3,LL4,LE4,LL5,LE5,LL6,LE6,                  0305
     2LL7,LE7,LL10,LE10                                                        0306
822   FORMAT(4X,A4,5(1X,I3),3X,7(I3,1X,I3,3X),20X,I3,1X,I3)                    0307
      N=N+1                                                                    0308
      IF(N.LT.51)GO TO 610                                                     0309
      WRITE(6,11)                                                              0310
      WRITE(6,981)                                                             0311
      N=3                                                                      0312
610   CONTINUE                                                                 0313
609   CONTINUE                                                                 0314
700   WRITE(6,11)                                                              0315
      WRITE(6,470)                                                             0316
470   FORMAT(2X,'SUMMARY TABLE OF INBOUND TO OUTBOUND TRAIN MAPPING'///)       0317
      WRITE(6,469)                                                             0318
469   FORMAT(35X,'CARS ADVANCED DUE TO:',8X,'CARS ON SCHEDULE DUE TO:',        0319
     16X,'CARS DELAYED DUE TO:',11X,'ROW'/                                     0320
     2                    31X,'EARLY ARR',1X,'YARD MOVE',2X,'LATE DEP',       0321
     33X,'NORMAL',2X,'YARD MOVE',2X,'LATE DEP',2X,'LATE ARR',1X,'OB BUIL       0322
     4DUP',2X,'OTHER',5X,'TOTALS'/29X,                                         0323
     53X,'LDS',1X,'EMP',3X,'LDS',1X,'EMP',3X,'LDS',1X,'EMP',3X,                0324
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     6   'LDS',1X,'EMP',3X,'LDS',1X,'EMP',3X,'LDS',1X,'EMP',3X,                0325
     7   'LDS',1X,'EMP',3X,'LDS',1X,'EMP',3X,'LDS',1X,'EMP',3X,                0326
     8   'LDS',1X,'EMP')                                                       0327
      WRITE(6,823)((TCOL(MOVLE),MOVLE=1,18),TOTLD,TOTEMP)                     0328
823   FORMAT(//4X,'COLUMN TOTALS:',12X,10(I4,   I4,2X))                       0329
      TROW=TOTLD                                                              0330
      J=1                                                                     0331
      DO 526 MOVLE=1,17,2                                                     0332
      L(1,J)=TCOL(MOVLE)                                                      0333
      J=J+1                                                                   0334
526   CONTINUE                                                                0335
      IFIN=3                                                                  0336
      K=9                                                                     0337
      GO TO 521                                                               0338
518   WRITE(6,471)(IPC(1,J),J=1,9)                                            0339
471   FORMAT(/4X,'LOADED PERCENTAGE:'/6X,'ALL LOADED CARS:',9X,9(I3,'%',      0340
     26X))                                                                    0341
      TROW=TLDXD                                                              0342
      IFIN=4                                                                  0343
      GO TO 522                                                               0344
519   WRITE(6,472)(IPC(1,J),J=1,7)                                            0345
472   FORMAT(6X,'EXCEPT HOLD & UNEXP.:',4X,7(I3,'%',6X))                      0346
      TROW=TOTEMP                                                             0347
      J=1                                                                     0348
      DO 527 MOVLE=2,18,2                                                     0349
      L(1,J)=TCOL(MOVLE)                                                      0350
      J=J+1                                                                   0351
527   CONTINUE                                                                0352
      IFIN=5                                                                  0353
      K=9                                                                     0354
      GO TO 521                                                               0355
520   WRITE(6,473)(IPC(1,J),J=1,9)                                            0356
473   FORMAT(/4X,'EMPTY PERCENTAGE'/6X,'ALL EMPTY CARS:',14X,9(I3,'%',        0357
     26X))                                                                    0358
      TROW=TEMPXD                                                             0359
      IFIN=6                                                                  0360
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      GO TO 522                                                          0361
524   WRITE(6,474)(IPC(1,J),J=1,7)                                       0362
474   FORMAT(6X,'EXCEPT HOLD & UNEXP.:',8X,7(I3,'%',6X))                 0363
C***  PRINT OUT PERFORMANCE VERSUS SCHEDULED YARD TIME FOR LOADED CARS   0364
620   WRITE(6,11)                                                        0365
      WRITE(6,983)                                                       0366
983   FORMAT(1X,'PERFORMANCE TABLE: ALL LOADED CARS VERSUS SCHEDULED YAR 0367
     1D TIME'//)                                                         0368
      WRITE(6,984)                                                       0369
984   FORMAT(2X,'SCHEDULED',9X,'CARS ADVANCED DUE TO:',8X,'CARS ON SCHED 0370
     1ULE DUE TO:',6X,'CARS DELAYED DUE TO:')                            0371
      WRITE(6,990)                                                       0372
990   FORMAT(                                  2X,'YARD TIME',5X,'EARLY AR 0373
     2R',1X,'YARD MOVE',2X,'LATE DEP',3X,'NORMAL',2X,'YARD MOVE',2X,     0374
     3'LATE DEP',2X,'LATE ARR',1X,'OB BUILDUP',2X,'OTHER'/17X,           0375
     4   'LDS',1X,' % ',3X,'LDS',1X,' % ',3X,'LDS',1X,' % ',3X,          0376
     5   'LDS',1X,' % ',3X,'LDS',1X,' % ',3X,'LDS',1X,' % ',3X,          0377
     6   'LDS',1X,' % ',3X,'LDS',7X,'LDS')                               0378
      DO 511 Y=8,31                                                      0379
      J=1                                                                0380
      DO 512 M=1,13,2                                                    0381
      L(Y,J)=SPERF(Y,M)                                                  0382
      J=J+1                                                              0383
512   CONTINUE                                                           0384
511   CONTINUE                                                           0385
      TCOL(8)=TCOL(15)                                                   0386
      TCOL(9)=TCOL(17)                                                   0387
      I=1                                                                0388
      M=8                                                                0389
      N=31                                                               0390
      IFIN=1                                                             0391
600   TOTAL=0                                                            0392
      DO 515 J=1,7                                                       0393
      TCOL(J)=0                                                          0394
515   CONTINUE                                                           0395
      DO 501 Y=M,N                                                       0396
```

```
      TROW=0                                                                0397
      DO 502 J=1,7                                                          0398
      TOTAL=TOTAL+L(Y,J)                                                    0399
      TCOL(J)=TCOL(J)+L(Y,J)                                                0400
      TROW=TROW+L(Y,J)                                                      0401
502   CONTINUE                                                              0402
      IF(TROW.EQ.0)GO TO 503                                                0403
      DO 504 J=1,7                                                          0404
      TOP=L(Y,J)                                                            0405
      BOT=TROW                                                              0406
      PC=100.0*TOP/BOT+0.5                                                  0407
      IPC(Y,J)=PC                                                           0408
504   CONTINUE                                                              0409
      GO TO 505                                                             0410
503   DO 506 J=1,7                                                          0411
      IPC(Y,J)=0                                                            0412
506   CONTINUE                                                              0413
505   WRITE(6,244)(Y,(L(Y,J),IPC(Y,J),J=1,7),TROW)                          0414
244   FORMAT(5X,I2,7X,7(2X,I3,1X,I3,'%'),22X,          I3)                  0415
      WRITE(7,25)((L(Y,J) ,J=1,9),TROW)                                     0416
25    FORMAT(10(I3,2X))                                                     0417
501   CONTINUE                                                              0418
509   WRITE(6,510)((TCOL(J),J=1,9),TOTAL)                                   0419
510   FORMAT(/1X,'COLUMN TOTALS:',1X, 8(I3,7X),I3,6X,I4)                    0420
      WRITE(7,441)((TCOL(J),J=1,9),TOTAL)                                   0421
441   FORMAT(8(I3,2X),I3,1X,I4)                                             0422
      TROW=0                                                                0423
      DO 507 J=1,9                                                          0424
      TROW=TROW+TCOL(J)                                                     0425
      L(1,J)=TCOL(J)                                                        0426
507   CONTINUE                                                              0427
      IFIN=2                                                                0428
      GO TO 521                                                             0429
522   K=7                                                                   0430
      GO TO 321                                                             0431
521   K=9                                                                   0432
```

```
321   IF(TROW.EQ.0)GO TO 302                                                0433
      DO 304 J=1,K                                                          0434
      TOP=L(1,J)                                                            0435
      BOT=TROW                                                              0436
      PC=100.0*TOP/BOT+0.5                                                  0437
      IPC(1,J)=PC                                                           0438
304   CONTINUE                                                              0439
      GO TO 301                                                             0440
302   DO 303 J=1,K                                                          0441
      IPC(1,J)=0                                                            0442
303   CONTINUE                                                              0443
301   L(1,8)=0                                                              0444
      L(1,9)=0                                                              0445
      GO TO (505,319,518,519,520,524,306),IFIN                              0446
319   WRITE(6,320)(IPC(1,J),J=1,9)                                          0447
320   FORMAT(/1X,'PERCENTAGE:'/3X,'ALL CARS:',4X,9(I3,'%',6X))              0448
      TROW=TROW-(TCOL(9)+TCOL(8))                                           0449
      IFIN=7                                                                0450
      GO TO 522                                                             0451
306   WRITE(6,307)(IPC(1,J),J=1,7)                                          0452
307   FORMAT(3X,'EXCEPT HOLD'/4X,'& OTHER:',4X,7(I3,'%',6X))                0453
      IFIN=1                                                                0454
      GO TO (571,572,573,574,575,576,577,578,579,580,581,582,583,584,       0455
     1585,586),I                                                            0456
C***  PRINT OUT PERFORMANCE VERSUS SCHEDULED YARD TIME FOR EMPTY CARS        0457
571   WRITE(6,11)                                                           0458
      WRITE(6,985)                                                          0459
985   FORMAT(1X,'PERFORMANCE TABLE: ALL EMPTY CARS VERSUS SCHEDULED YARD    0460
     1 TIME'//)                                                             0461
      WRITE(6,984)                                                          0462
      WRITE(6,991)                                                          0463
991   FORMAT(                                    2X,'YARD TIME',5X,'EARLY AR 0464
     2R',1X,'YARD MOVE',2X,'LATE DEP',3X,'NORMAL',2X,'YARD MOVE',2X,        0465
     3'LATE DEP',2X,'LATE ARR',1X,'OB BUILDUP',2X,'OTHER'/17X,              0466
     4   'EMP',1X,' % ',3X,'EMP',1X,' % ',3X,'EMP',1X,' % ',3X,             0467
     5   'EMP',1X,' % ',3X,'EMP',1X,' % ',3X,'EMP',1X,' % ',3X,             0468
```

```
     6   'EMP',1X,' % ',3X,'EMP',7X,'EMP')                                  0469
      DO 513 Y=8,31                                                         0470
      J=1                                                                   0471
      DO 552 M=2,14,2                                                       0472
      L(Y,J)=SPERF(Y,M)                                                     0473
      J=J+1                                                                 0474
552   CONTINUE                                                              0475
513   CONTINUE                                                              0476
      TCOL(8)=TCOL(16)                                                      0477
      TCOL(9)=TCOL(18)                                                      0478
      M=8                                                                   0479
      N=31                                                                  0480
      I=2                                                                   0481
      GO TO 600                                                             0482
C***  PRINT OUT PERFORMANCE VERSUS ACTUAL YARD TIME FOR LOADED CARS         0483
572   WRITE(6,11)                                                           0484
      WRITE(6,986)                                                          0485
986   FORMAT(1X,'PERFORMANCE TABLE: ALL LOADED CARS VERSUS ACTUAL YARD T    0486
     1IME'//)                                                               0487
      WRITE(6,989)                                                          0488
989   FORMAT(2X,'ACTUAL',  12X,'CARS ADVANCED DUE TO:',8X,'CARS ON SCHED    0489
     1ULE DUE TO:',6X,'CARS DELAYED DUE TO:')                               0490
      WRITE(6,990)                                                          0491
      DO 551 Y=1,33                                                         0492
      J=1                                                                   0493
      DO 514 M=1,13,2                                                       0494
      L(Y,J)=APERF(Y,M)                                                     0495
      J=J+1                                                                 0496
514   CONTINUE                                                              0497
551   CONTINUE                                                              0498
      TCOL(8)=TCOL(15)                                                      0499
      TCOL(9)=TCOL(17)                                                      0500
      M=1                                                                   0501
      N=33                                                                  0502
      I=3                                                                   0503
      GO TO 600                                                             0504
```

```
C***  PRINT OUT PERFORMANCE VERSUS ACTUAL YARD TIME FOR EMPTY CARS
573   WRITE(6,11)
      WRITE(6,987)
987   FORMAT(1X,'PERFORMANCE TABLE: ALL EMPTY CARS VERSUS ACTUAL YARD TI
     1ME'//)
      WRITE(6,989)
      WRITE(6,991)
      DO 523 Y=1,33
      J=1
      DO 554 M=2,14,2
      L(Y,J)=APERF(Y,M)
      J=J+1
554   CONTINUE
523   CONTINUE
      TCOL(8)=TCOL(16)
      TCOL(9)=TCOL(18)
      M=1
      N=33
      I=4
      GO TO 600
C**   EB LOADS--SCHEDULED
574   WRITE (6,11)
      WRITE(6,750)
750   FORMAT(1X,'PERFORMANCE TABLE: EASTBOUND LOADED CARS VERSUS SCHEDUL
     1ED YARD TIME'//)
      WRITE(6,984)
      WRITE(6,990)
      DO 595 Y=8,31
      J=1
      DO 516 M=1,13,2
      L(Y,J)=SPERE(Y,M)
      J=J+1
516   CONTINUE
595   CONTINUE
      TCOL(8)=TDCOLE(15)
      TCOL(9)=TDCOLE(17)
```

```
      M=8                                                                0541
      N=31                                                               0542
      I=5                                                                0543
      GO TO 600                                                          0544
C***  EB EMPTIES--SCHEDULED                                              0545
575   WRITE(6,11)                                                        0546
      WRITE(6,751)                                                       0547
751   FORMAT(1X,'PERFORMANCE TABLE: EASTBOUND EMPTY CARS VERSUS SCHEDULE 0548
     1D YARD TIME'//)                                                    0549
      WRITE(6,984)                                                       0550
      WRITE(6,991)                                                       0551
      DO 517 Y=8,31                                                      0552
      J=1                                                                0553
      DO 556 M=2,14,2                                                    0554
      L(Y,J)=SPERE(Y,M)                                                  0555
      J=J+1                                                              0556
556   CONTINUE                                                           0557
517   CONTINUE                                                           0558
      TCCL(8)=TDCOLE(16)                                                 0559
      TCOL(9)=TDCOLE(18)                                                 0560
      M=8                                                                0561
      N=31                                                               0562
      I=6                                                                0563
      GO TO 600                                                          0564
C***  WB LOADED--SCHEDULED                                               0565
576   WRITE(6,11)                                                        0566
      WRITE(6,752)                                                       0567
752   FORMAT(1X,'PERFORMANCE TABLE: WESTBOUND LOADED CARS VERSUS SCHEDUL 0568
     1ED YARD TIME'//)                                                   0569
      WRITE(6,984)                                                       0570
      WRITE(6,990)                                                       0571
      DO 531 Y=8,31                                                      0572
      J=1                                                                0573
      DO 537 M=1,13,2                                                    0574
      L(Y,J)=SPERW(Y,M)                                                  0575
      J=J+1                                                              0576
```

```
537   CONTINUE                                                                0577
531   CONTINUE                                                                0578
      TCOL(8)=TDCOLW(15)                                                      0579
      TCOL(9)=TDCOLW(17)                                                      0580
      M=8                                                                     0581
      N=31                                                                    0582
      I=7                                                                     0583
      GO TO 600                                                               0584
C**   WB EMPTIES--SCHEDULED                                                   0585
577   WRITE(6,11)                                                             0586
      WRITE(6,753)                                                            0587
753   FORMAT(1X,'PERFORMANCE TABLE: WESTBOUND EMPTY CARS VERSUS SCHEDULE      0588
     1D YARD TIME'//)                                                         0589
      WRITE(6,984)                                                            0590
      WRITE(6,991)                                                            0591
      DO 533 Y=8,31                                                           0592
      J=1                                                                     0593
      DO 536 M=2,14,2                                                         0594
      L(Y,J)=SPERW(Y,M)                                                       0595
      J=J+1                                                                   0596
536   CONTINUE                                                                0597
533   CONTINUE                                                                0598
      TCOL(8)=TDCOLW(16)                                                      0599
      TCOL(9)=TDCOLW(18)                                                      0600
      M=8                                                                     0601
      N=31                                                                    0602
      I=8                                                                     0603
      GO TO 600                                                               0604
C**   LOCAL LOADS--SCHEDULED                                                  0605
578   WRITE(6,11)                                                             0606
      WRITE(6,754)                                                            0607
754   FORMAT(1X,'PERFORMANCE TABLE: LOCAL LOADED CARS VERSUS SCHEDULED Y      0608
     1ARD TIME'//)                                                            0609
      WRITE(6,984)                                                            0610
      WRITE(6,990)                                                            0611
      DO 535 Y=8,31                                                           0612
```

```
      J=1                                                                0613
      DO 529 M=1,13,2                                                    0614
      L(Y,J)=SPERL(Y,M)                                                  0615
      J=J+1                                                              0616
529   CONTINUE                                                           0617
535   CONTINUE                                                           0618
      TCOL(8)=TDCOLL(15)                                                 0619
      TCOL(9)=TDCOLL(17)                                                 0620
      M=8                                                                0621
      N=31                                                               0622
      I=9                                                                0623
      GO TO 600                                                          0624
C**   LOCAL EMPTIES--SCHEDULED                                           0625
579   WRITE(6,11)                                                        0626
      WRITE(6,755)                                                       0627
755   FORMAT(1X,'PERFORMANCE TABLE: LOCAL EMPTY CARS VERSUS SCHEDULED YA 0628
     1RD TIME'//)                                                        0629
      WRITE(6,984)                                                       0630
      WRITE(6,991)                                                       0631
      DO 561 Y=8,31                                                      0632
      J=1                                                                0633
      DO 540 M=2,14,2                                                    0634
      L(Y,J)=SPERL(Y,M)                                                  0635
      J=J+1                                                              0636
540   CONTINUE                                                           0637
561   CONTINUE                                                           0638
      TCOL(8)=TDCOLL(16)                                                 0639
      TCOL(9)=TDCOLL(18)                                                 0640
      M=8                                                                0641
      N=31                                                               0642
      I=10                                                               0643
      GO TO 600                                                          0644
C***  EB LOADS--ACTUAL                                                   0645
580   WRITE(6,11)                                                        0646
      WRITE(6,756)                                                       0647
756   FORMAT(1X,'PERFORMANCE TABLE: EASTBOUND LOADED CARS VERSUS ACTUAL  0648
```

```
     1YARD TIME'//)                                                                    0649
      WRITE(6,989)                                                                     0650
      WRITE(6,990)                                                                     0651
      DO 525 Y=1,33                                                                    0652
      J=1                                                                              0653
      DO 548 M=1,13,2                                                                  0654
      L(Y,J)=APERE(Y,M)                                                                0655
      J=J+1                                                                            0656
548   CONTINUE                                                                         0657
525   CONTINUE                                                                         0658
      TCOL(8)=TDCOLE(15)                                                               0659
      TCOL(9)=TDCOLE(17)                                                               0660
      M=1                                                                              0661
      N=33                                                                             0662
      I=11                                                                             0663
      GO TO 600                                                                        0664
C***  EB EMPTIES--ACTUAL                                                               0665
581   WRITE(6,11)                                                                      0666
      WRITE(6,757)                                                                     0667
757   FORMAT(1X,'PERFORMANCE TABLE: EASTBOUND EMPTY CARS VERSUS ACTUAL Y               0668
     1ARD TIME'//)                                                                     0669
      WRITE(6,989)                                                                     0670
      WRITE(6,991)                                                                     0671
      DO 557 Y=1,33                                                                    0672
      J=1                                                                              0673
      DO 528 M=2,14,2                                                                  0674
      L(Y,J)=APERE(Y,M)                                                                0675
      J=J+1                                                                            0676
528   CONTINUE                                                                         0677
557   CONTINUE                                                                         0678
      TCOL(8)=TDCOLE(16)                                                               0679
      TCOL(9)=TDCOLE(18)                                                               0680
      M=1                                                                              0681
      N=33                                                                             0682
      I=12                                                                             0683
      GO TO 600                                                                        0684
```

```
C***  WB LOADS--ACTUAL                                                      0685
582   WRITE(6,11)                                                           0686
      WRITE(6,758)                                                          0687
758   FORMAT(1X,'PERFORMANCE TABLE: WESTBOUND LOADED CARS VERSUS ACTUAL     0688
     1YARD TIME'//)                                                         0689
      WRITE(6,989)                                                          0690
      WRITE(6,990)                                                          0691
      DO 532 Y=1,33                                                         0692
      J=1                                                                   0693
      DO 539 M=1,13,2                                                       0694
      L(Y,J)=APERW(Y,M)                                                     0695
      J=J+1                                                                 0696
539   CONTINUE                                                              0697
532   CONTINUE                                                              0698
      TCOL(8)=TDCOLW(15)                                                    0699
      TCOL(9)=TDCOLW(17)                                                    0700
      M=1                                                                   0701
      N=33                                                                  0702
      I=13                                                                  0703
      GO TO 600                                                             0704
C**   WB EMPTIES--ACTUAL                                                    0705
583   WRITE(6,11)                                                           0706
      WRITE(6,759)                                                          0707
759   FORMAT(1X,'PERFORMANCE TABLE: WESTBOUND EMPTY CARS VERSUS ACTUAL Y    0708
     1ARD TIME'//)                                                          0709
      WRITE(6,989)                                                          0710
      WRITE(6,991)                                                          0711
      DO 534 Y=1,33                                                         0712
      J=1                                                                   0713
      DO 530 M=2,14,2                                                       0714
      L(Y,J)=APERW(Y,M)                                                     0715
      J=J+1                                                                 0716
530   CONTINUE                                                              0717
534   CONTINUE                                                              0718
      TCOL(8)=TDCOLW(16)                                                    0719
      TCOL(9)=TDCOLW(18)                                                    0720
```

```
      M=1                                                                0721
      N=33                                                               0722
      I=14                                                               0723
      GO TO 600                                                          0724
C***  LOCAL LOADS--ACTUAL                                                0725
584   WRITE(6,11)                                                        0726
      WRITE(6,760)                                                       0727
760   FORMAT(1X,'PERFORMANCE TABLE: LOCAL LOADED CARS VERSUS ACTUAL YARD 0728
     1 TIME'//)                                                          0729
      WRITE(6,989)                                                       0730
      WRITE(6,990)                                                       0731
      DO 538 Y=1,33                                                      0732
      J=1                                                                0733
      DO 542 M=1,13,2                                                    0734
      L(Y,J)=APERL(Y,M)                                                  0735
      J=J+1                                                              0736
542   CONTINUE                                                           0737
538   CONTINUE                                                           0738
      TCOL(8)=TDCOLL(15)                                                 0739
      TCOL(9)=TDCOLL(17)                                                 0740
      M=1                                                                0741
      N=33                                                               0742
      I=15                                                               0743
      GO TO 600                                                          0744
C***  LOCAL EMPTIES--ACTUAL                                              0745
585   WRITE(6,11)                                                        0746
      WRITE(6,761)                                                       0747
761   FORMAT(1X,'PERFORMANCE TABLE: LOCAL EMPTY CARS VERSUS ACTUAL YARD  0748
     1TIME'//)                                                           0749
      WRITE(6,989)                                                       0750
      WRITE(6,991)                                                       0751
      DO 546 Y=1,33                                                      0752
      J=1                                                                0753
      DO 544 M=2,14,2                                                    0754
      L(Y,J)=APERL(Y,M)                                                  0755
      J=J+1                                                              0756
```

```
544   CONTINUE                                                    0757
546   CONTINUE                                                    0758
      TCOL(8)=TDCOLL(16)                                          0759
      TCOL(9)=TDCOLL(18)                                          0760
      M=1                                                         0761
      N=33                                                        0762
      I=16                                                        0763
      GO TO 600                                                   0764
586   CALL EXIT                                                   0765
      END                                                         0766
      INTEGER FUNCTION EMPTY*2(N)                                 0767
      INTEGER*2 N                                                 0768
      EMPTY=N-100*(N/100)                                         0769
      RETURN                                                      0770
      END                                                         0771
      INTEGER FUNCTION LOAD*2(N)                                  0772
      INTEGER*2 N                                                 0773
      LOAD=N/100                                                  0774
      RETURN                                                      0775
      END                                                         0776
```

APPENDIX III

LISTING OF SUMMARY PROGRAM

```
      INTEGER   TOTXD,L(33,11)/363*0/,TROW(33),TCOL(11),LL(33,11),                0001
     2IPC(33,11)/363*0/,Y,TOTAL                                                   0002
C***  PRINT OUT PERFORMANCE VERSUS SCHEDULED YARD TIME FOR LOADED CARS            0003
      WRITE(6,11)                                                                 0004
11    FORMAT('1','SUMMARY:  JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 &          0005
     1 23, 1971')                                                                 0006
      NDAYS=1                                                                     0007
      WRITE(6,983)                                                                0008
983   FORMAT(1X,'PERFORMANCE TABLE: ALL LOADED CARS VERSUS SCHEDULED YAR          0009
     1D TIME'//)                                                                  0010
      WRITE(6,984)                                                                0011
984   FORMAT(2X,'SCHEDULED',9X,'CARS ADVANCED DUE TO:',8X,'CARS ON SCHED          0012
     1ULE DUE TO:',9X,'CARS  DELAYED  DUE  TO:',11X,'ROW')                        0013
      WRITE(6,990)                                                                0014
990   FORMAT(                                        2X,'YARD TIME',5X,'EARLY AR  0015
     2R',1X,'YARD MOVE',2X,'LATE DEP',2X,'NORMAL',2X,'YARD MOVE',2X,              0016
     3'LATE DEP',2X,'LATE ARR',2X,'LATE HUMP',1X,'OB BUILDUP OTHER',2X,           0017
     1'TOTAL'/17X,8( 'LDS',1X,' % ',3X),'LDS',7X,'LDS')                           0018
      I=1                                                                         0019
      M=8                                                                         0020
      N=31                                                                        0021
      IFIN=1                                                                      0022
600   TOTXD=0                                                                     0023
      DO 19 Y=M,N                                                                 0024
      DO 12 J=1,11                                                                0025
      L(Y,J)=0                                                                    0026
12    CONTINUE                                                                    0027
19    CONTINUE                                                                    0028
      DO 318 J=1,11                                                               0029
      TCOL(J)=0                                                                   0030
318   CONTINUE                                                                    0031
      DO 1 K=1,NDAYS                                                              0032
      DO 2 Y=M,N                                                                  0033
      READ(5,13) (LL(Y,J),J=1,8)                                                  0034
13    FORMAT( 8(I3,2X))                                                           0035
      TROW(Y)=0                                                                   0036
```

```
      DO 3 J=1,8                                                          0037
      L(Y,J)=L(Y,J)+LL(Y,J)                                               0038
      TROW(Y)=TROW(Y)+LL(Y,J)                                             0039
3     CONTINUE                                                            0040
2     CONTINUE                                                            0041
      READ(5, 5)(LL(1,J),J=1,11)                                          0042
5     FORMAT(I3,1X,10(I4,1X))                                             0043
      DO 4 J=1,11                                                         0044
      TCOL(J)=TCOL(J)+LL(1,J)                                             0045
4     CONTINUE                                                            0046
1     CONTINUE                                                            0047
      TOTXD=TCOL(11)                                                      0048
      TOTAL=TOTXD+TCOL(9)+TCOL(10)                                        0049
      DO 501 Y=M,N                                                        0050
      IF(TROW(Y).EQ.0)GO TO 503                                           0051
      DO 504 J=1,8                                                        0052
      TOP=L(Y,J)                                                          0053
      BOT=TROW(Y)                                                         0054
      PC=100.0*TOP/BOT+0.5                                                0055
      IPC(Y,J)=PC                                                         0056
504   CONTINUE                                                            0057
      GO TO 505                                                           0058
503   DO 506 J=1,8                                                        0059
      IPC(Y,J)=0                                                          0060
506   CONTINUE                                                            0061
505   WRITE(6,244)(Y,(L(Y,J),IPC(Y,J),J=1,8),TROW(Y))                     0062
244   FORMAT(5X,I2,7X,8(2X,I3,1X,I3,'%'),21X,I4)                          0063
501   CONTINUE                                                            0064
509   WRITE(6,510) (TCOL(J),J=1,11)                                       0065
510   FORMAT(/1X,'COLUMN TOTALS:',11(I4,6X))                              0066
      TROW(1)=TOTAL                                                       0067
      DO 6 J=1,10                                                         0068
      L(1,J)=TCOL(J)                                                      0069
6     CONTINUE                                                            0070
      IFIN=2                                                              0071
      GO TO 521                                                           0072
```

```
522   K=8                                                                    0073
      GO TO 17                                                               0074
521   K=10                                                                   0075
17    IF(TROW(1).EQ.0)GO TO 303                                              0076
      DO 304 J=1,K                                                           0077
      TOP=L(1,J)                                                             0078
      BOT=TROW(1)                                                            0079
      PC=100.0*TOP/BOT+0.5                                                   0080
      IPC(1,J)=PC                                                            0081
304   CONTINUE                                                               0082
      GO TO 307                                                              0083
303   DO 306 J=1,K                                                           0084
      IPC(1,J)=0                                                             0085
306   CONTINUE                                                               0086
307   IF(IFIN.EQ.1)GO TO 18                                                  0087
14    WRITE(6,512)(IPC(1,J),J=1,10)                                          0088
512   FORMAT(/1X,'PERCENTAGE:'/3X,'ALL CARS:',3X,10(I3,'%',6X))              0089
      TROW(1)=TOTXD                                                          0090
      IFIN=1                                                                 0091
      GO TO 522                                                              0092
18    WRITE(6,511)(IPC(1,J),J=1,8)                                           0093
511   FORMAT(3X,'EXCEPT HOLD'/4X,'& UNEXP:',3X,8(I3,'%',6X))                 0094
      GO TO (571,572,573,574,575,576,577,578,579,580,581,582,583,584,        0095
     1585,586),I                                                             0096
C***  PRINT OUT PERFORMANCE VERSUS SCHEDULED YARD TIME FOR EMPTY CARS         0097
571   WRITE(6,11)                                                            0098
      WRITE(6,985)                                                           0099
985   FORMAT(1X,'PERFORMANCE TABLE: ALL EMPTY CARS VERSUS SCHEDULED YARD     0100
     1 TIME'//)                                                              0101
      WRITE(6,984)                                                           0102
      WRITE(6,991)                                                           0103
991   FORMAT(                                    2X,'YARD TIME',5X,'EARLY AR 0104
     2R',1X,'YARD MOVE',2X,'LATE DEP',3X,'NORMAL',2X,'YARD MOVE',2X,         0105
     3'LATE DEP',2X,'LATE ARR',2X,'LATE HUMP OB BUILDUP OTHER  TOTAL'/       0106
     417X,8('EMP',1X,' % ',3X),'EMP',7X,'EMP')                               0107
      M=8                                                                    0108
```

```
      N=31                                                                  0109
      I=2                                                                   0110
      GO TO 600                                                             0111
C***  PRINT OUT PERFORMANCE VERSUS ACTUAL YARD TIME FOR LOADED CARS         0112
572   WRITE(6,11)                                                           0113
      WRITE(6,986)                                                          0114
986   FORMAT(1X,'PERFORMANCE TABLE: ALL LOADED CARS VERSUS ACTUAL YARD T     0115
     1IME'//)                                                               0116
      WRITE(6,989)                                                          0117
989   FORMAT(2X,'ACTUAL',  12X,'CARS ADVANCED DUE TO:',8X,'CARS ON SCHED     0118
     1ULE DUE TO:',6X,'CARS DELAYED DUE TO:')                               0119
      WRITE(6,990)                                                          0120
      M=1                                                                   0121
      N=33                                                                  0122
      I=3                                                                   0123
      GO TO 600                                                             0124
C***  PRINT OUT PERFORMANCE VERSUS ACTUAL YARD TIME FOR EMPTY CARS          0125
573   WRITE(6,11)                                                           0126
      WRITE(6,987)                                                          0127
987   FORMAT(1X,'PERFORMANCE TABLE: ALL EMPTY CARS VERSUS ACTUAL YARD TI     0128
     1ME'//)                                                                0129
      WRITE(6,989)                                                          0130
      WRITE(6,991)                                                          0131
      M=1                                                                   0132
      N=33                                                                  0133
      I=4                                                                   0134
      GO TO 600                                                             0135
C**   EB LOADS--SCHEDULED                                                   0136
574   WRITE (6,11)                                                          0137
      WRITE(6,750)                                                          0138
750   FORMAT(1X,'PERFORMANCE TABLE: EASTBOUND LOADED CARS VERSUS SCHEDUL     0139
     1ED YARD TIME'//)                                                      0140
      WRITE(6,984)                                                          0141
      WRITE(6,990)                                                          0142
      M=8                                                                   0143
      N=31                                                                  0144
```

```
      I=5                                                                0145
      GO TO 600                                                          0146
C**** EB EMPTIES--SCHEDULED                                              0147
575   WRITE(6,11)                                                        0148
      WRITE(6,751)                                                       0149
751   FORMAT(1X,'PERFORMANCE TABLE: EASTBOUND EMPTY CARS VERSUS SCHEDULE 0150
     1D YARD TIME'//)                                                    0151
      WRITE(6,984)                                                       0152
      WRITE(6,991)                                                       0153
      M=8                                                                0154
      N=31                                                               0155
      I=6                                                                0156
      GO TO 600                                                          0157
C**** WB LOADED--SCHEDULED                                               0158
576   WRITE(6,11)                                                        0159
      WRITE(6,752)                                                       0160
752   FORMAT(1X,'PERFORMANCE TABLE: WESTBOUND LOADED CARS VERSUS SCHEDUL 0161
     1ED YARD TIME'//)                                                   0162
      WRITE(6,984)                                                       0163
      WRITE(6,990)                                                       0164
      M=8                                                                0165
      N=31                                                               0166
      I=7                                                                0167
      GO TO 600                                                          0168
C**   WB EMPTIES--SCHEDULED                                              0169
577   WRITE(6,11)                                                        0170
      WRITE(6,753)                                                       0171
753   FORMAT(1X,'PERFORMANCE TABLE: WESTBOUND EMPTY CARS VERSUS SCHEDULE 0172
     1D YARD TIME'//)                                                    0173
      WRITE(6,984)                                                       0174
      WRITE(6,991)                                                       0175
      M=8                                                                0176
      N=31                                                               0177
      I=8                                                                0178
      GO TO 600                                                          0179
C**   LOCAL LOADS--SCHEDULED                                             0180
```

```
573    WRITE(6,11)                                                          0181
       WRITE(6,754)                                                         0182
754    FORMAT(1X,'PERFORMANCE TABLE: LOCAL LOADED CARS VERSUS SCHEDULED Y   0183
      1ARD TIME'//)                                                         0184
       WRITE(6,984)                                                         0185
       WRITE(6,990)                                                         0186
       M=8                                                                  0187
       N=31                                                                 0188
       I=9                                                                  0189
       GO TO 600                                                            0190
C**    LOCAL EMPTIES--SCHEDULED                                             0191
579    WRITE(6,11)                                                          0192
       WRITE(6,755)                                                         0193
755    FORMAT(1X,'PERFORMANCE TABLE: LOCAL EMPTY CARS VERSUS SCHEDULED YA   0194
      1RD TIME'//)                                                          0195
       WRITE(6,984)                                                         0196
       WRITE(6,991)                                                         0197
       M=8                                                                  0198
       N=31                                                                 0199
       I=10                                                                 0200
       GO TO 600                                                            0201
C****  EB LOADS--ACTUAL                                                     0202
580    WRITE(6,11)                                                          0203
       WRITE(6,756)                                                         0204
756    FORMAT(1X,'PERFORMANCE TABLE: EASTBOUND LOADED CARS VERSUS ACTUAL    0205
      1YARD TIME'//)                                                        0206
       WRITE(6,989)                                                         0207
       WRITE(6,990)                                                         0208
       M=1                                                                  0209
       N=33                                                                 0210
       I=11                                                                 0211
       GO TO 600                                                            0212
C****  EB EMPTIES--ACTUAL                                                   0213
581    WRITE(6,11)                                                          0214
       WRITE(6,757)                                                         0215
757    FORMAT(1X,'PERFORMANCE TABLE: EASTBOUND EMPTY CARS VERSUS ACTUAL Y   0216
```

```
     1ARD TIME'//)                                                                0217
      WRITE(6,989)                                                                0218
      WRITE(6,991)                                                                0219
      M=1                                                                         0220
      N=33                                                                        0221
      I=12                                                                        0222
      GO TO 600                                                                   0223
C***  WB LOADS--ACTUAL                                                            0224
582   WRITE(6,11)                                                                 0225
      WRITE(6,758)                                                                0226
758   FORMAT(1X,'PERFORMANCE TABLE: WESTBOUND LOADED CARS VERSUS ACTUAL           0227
     1YARD TIME'//)                                                               0228
      WRITE(6,989)                                                                0229
      WRITE(6,990)                                                                0230
      M=1                                                                         0231
      N=33                                                                        0232
      I=13                                                                        0233
      GO TO 600                                                                   0234
C***  WB EMPTIES--ACTUAL                                                          0235
583   WRITE(6,11)                                                                 0236
      WRITE(6,656)                                                                0237
656   FORMAT(1X,'PERFORMANCE TABLE: WESTBOUND EMPTY CARS VERSUS ACTUAL Y          0238
     1ARD TIME'//)                                                                0239
      WRITE(6,989)                                                                0240
      WRITE(6,991)                                                                0241
      M=1                                                                         0242
      N=33                                                                        0243
      I=14                                                                        0244
      GO TO 600                                                                   0245
C**** LOCAL LOADS--ACTUAL                                                         0246
584   WRITE(6,11)                                                                 0247
      WRITE(6,760)                                                                0248
760   FORMAT(1X,'PERFORMANCE TABLE: LOCAL LOADED CARS VERSUS ACTUAL YARD          0249
     1 TIME'//)                                                                   0250
      WRITE(6,989)                                                                0251
      WRITE(6,990)                                                                0252
```

```
      M=1                                                                    0253
      N=33                                                                   0254
      I=15                                                                   0255
      GO TO 600                                                              0256
C**** LOCAL EMPTIES--ACTUAL                                                  0257
585   WRITE(6,11)                                                            0258
      WRITE(6,761)                                                           0259
761   FORMAT(1X,'PERFORMANCE TABLE: LOCAL EMPTY CARS VERSUS ACTUAL YARD      0260
     1TIME'//)                                                               0261
      WRITE(6,989)                                                           0262
      WRITE(6,991)                                                           0263
      M=1                                                                    0264
      N=33                                                                   0265
      I=16                                                                   0266
      GO TO 600                                                              0267
586   CALL EXIT                                                              0268
      END                                                                    0269
```

APPENDIX IV

SUMMARY TABLES OF CAR MOVEMENT PERFORMANCE

VERSUS

YARD TIME PARAMETERS

SUMMARY: JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 & 23, 1971
PERFORMANCE TABLE: ALL LOADED CARS VERSUS SCHEDULED YARD TIME

SCHEDULED YARD TIME	CARS ADVANCED DUE TO: EARLY ARR		YARD MOVE		LATE DEP		CARS ON SCHEDULE DUE TO: NORMAL		YARD MOVE		LATE DEP		CARS DELAYED DUE TO: LATE ARR		LATE HUMP		OB BUILDUP	OTHER	ROW TOTAL
	LDS	%	LDS	%	LDS	%	LDS	%	LDS	%	LDS	%	LDS	%	LDS	%	LDS	LDS	
8	0	0%	0	0%	0	0%	41	8%	207	43%	115	24%	99	20%	22	5%			484
9	0	0%	0	0%	0	0%	64	25%	25	10%	74	29%	56	22%	36	14%			255
10	0	0%	0	0%	0	0%	164	34%	38	8%	145	30%	115	24%	22	5%			484
11	0	0%	0	0%	0	0%	222	42%	31	6%	190	36%	67	13%	17	3%			527
12	0	0%	0	0%	0	0%	231	56%	7	2%	83	20%	81	20%	12	3%			414
13	0	0%	0	0%	0	0%	225	63%	26	7%	23	6%	83	23%	1	0%			358
14	0	0%	0	0%	0	0%	204	78%	19	7%	4	2%	16	6%	17	7%			260
15	0	0%	0	0%	1	0%	266	72%	19	5%	14	4%	60	16%	8	2%			368
16	0	0%	0	0%	0	0%	194	66%	9	3%	29	10%	50	17%	12	4%			294
17	0	0%	0	0%	0	0%	165	76%	0	0%	9	4%	19	9%	24	11%			217
18	0	0%	0	0%	0	0%	101	96%	2	2%	1	1%	0	0%	1	1%			105
19	0	0%	0	0%	0	0%	147	73%	0	0%	14	7%	31	15%	10	5%			202
20	0	0%	0	0%	1	1%	165	94%	0	0%	9	5%	0	0%	0	0%			175
21	0	0%	0	0%	4	1%	263	93%	0	0%	2	1%	14	5%	0	0%			283
22	0	0%	0	0%	0	0%	247	96%	0	0%	0	0%	7	3%	2	1%			256
23	0	0%	1	0%	0	0%	248	99%	0	0%	0	0%	0	0%	2	1%			251
24	0	0%	0	0%	4	2%	157	98%	0	0%	0	0%	0	0%	0	0%			161
25	0	0%	0	0%	12	5%	231	95%	0	0%	0	0%	0	0%	0	0%			243
26	0	0%	2	1%	0	0%	219	99%	0	0%	0	0%	0	0%	0	0%			221
27	0	0%	7	4%	0	0%	190	96%	0	0%	0	0%	0	0%	0	0%			197
28	0	0%	0	0%	31	27%	85	73%	0	0%	0	0%	0	0%	0	0%			116
29	1	1%	11	10%	7	7%	86	82%	0	0%	0	0%	0	0%	0	0%			105
30	11	13%	0	0%	6	7%	70	80%	0	0%	0	0%	0	0%	0	0%			87
31	12	12%	2	2%	45	45%	42	42%	0	0%	0	0%	0	0%	0	0%			101
COLUMN TOTALS:	24		23		111		4027		383		712		698		186		1410	129	6164
PERCENTAGE:																			
ALL CARS:	0%		0%		1%		52%		5%		9%		9%		2%		18%	2%	
EXCEPT HOLD & UNEXP:	0%		0%		2%		65%		6%		12%		11%		3%				

SUMMARY: JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 & 23, 1971
PERFORMANCE TABLE: ALL EMPTY CARS VERSUS SCHEDULED YARD TIME

SCHEDULED YARD TIME	CARS ADVANCED DUE TO: EARLY ARR EMP	%	YARD MOVE EMP	%	LATE DEP EMP	%	CARS ON SCHEDULE DUE TO: NORMAL EMP	%	YARD MOVE EMP	%	LATE DEP EMP	%	CARS DELAYED DUE TO: LATE ARR EMP	%	LATE HUMP EMP	%	OB BUILDUP EMP	OTHER EMP	ROW TOTAL
9	0	0%	0	0%	0	0%	15	12%	0	0%	9	7%	98	78%	3	2%			125
9	0	0%	0	0%	0	0%	9	8%	0	0%	0	0%	54	48%	50	44%			113
10	0	0%	0	0%	0	0%	23	32%	0	0%	4	5%	38	52%	8	11%			73
11	0	0%	0	0%	0	0%	53	30%	1	1%	13	7%	103	59%	6	3%			176
12	0	0%	0	0%	0	0%	13	12%	0	0%	14	13%	73	67%	9	8%			109
13	0	0%	0	0%	0	0%	46	36%	0	0%	2	2%	33	26%	46	36%			127
14	0	0%	0	0%	0	0%	26	32%	0	0%	3	4%	30	37%	22	27%			81
15	0	0%	0	0%	0	0%	112	75%	0	0%	4	3%	23	15%	10	7%			149
16	0	0%	0	0%	0	0%	30	35%	1	1%	2	2%	24	28%	29	34%			86
17	0	0%	0	0%	0	0%	118	76%	0	0%	1	1%	30	19%	6	4%			155
18	0	0%	0	0%	0	0%	115	79%	0	0%	0	0%	26	18%	5	3%			146
19	0	0%	0	0%	0	0%	27	56%	0	0%	0	0%	21	44%	0	0%			48
20	0	0%	0	0%	4	3%	105	66%	0	0%	3	2%	13	8%	33	21%			158
21	0	0%	0	0%	0	0%	62	93%	0	0%	0	0%	5	7%	0	0%			67
22	0	0%	0	0%	1	1%	55	73%	0	0%	0	0%	10	13%	9	12%			75
23	0	0%	0	0%	0	0%	74	100%	0	0%	0	0%	0	0%	0	0%			74
24	0	0%	0	0%	1	1%	152	95%	0	0%	0	0%	0	0%	7	4%			160
25	0	0%	0	0%	0	0%	96	100%	0	0%	0	0%	0	0%	0	0%			96
26	0	0%	0	0%	0	0%	106	99%	0	0%	0	0%	0	0%	1	1%			107
27	0	0%	3	3%	0	0%	103	97%	0	0%	0	0%	0	0%	0	0%			106
28	0	0%	0	0%	6	6%	100	94%	0	0%	0	0%	0	0%	0	0%			106
29	0	0%	0	0%	34	28%	87	72%	0	0%	0	0%	0	0%	0	0%			121
30	0	0%	0	0%	0	0%	50	100%	0	0%	0	0%	0	0%	0	0%			50
31	1	2%	0	0%	7	11%	55	87%	0	0%	0	0%	0	0%	0	0%			63
COLUMN TOTALS:	1		3		53		1632		2		55		581		244		271	173	2571
PERCENTAGE: ALL CARS:	0%		0%		1%		30%		0%		1%		11%		4%		50%	3%	
EXCEPT HOLD & UNEXP.	0%		0%		2%		63%		0%		2%		23%		9%				

SUMMARY: JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 & 23, 1971
PERFORMANCE TABLE: ALL LOADED CARS VERSUS ACTUAL YARD TIME

ACTUAL YARD TIME	CARS ADVANCED DUE TO: EARLY ARR LDS	%	YARD MOVE LDS	%	LATE DEP LDS	%	CARS ON SCHEDULE DUE TO: NORMAL LDS	%	YARD MOVE LDS	%	CARS DELAYED DUE TO: LATE DEP LDS	%	LATE ARR LDS	%	LATE HUMP LDS	%	OB BUILDUP LDS	OTHER LDS	TOTAL
1	0	0%	0	0%	0	0%	0	0%	55	21%	0	0%	206	79%	0	0%			261
2	0	0%	0	0%	0	0%	0	0%	16	19%	5	6%	64	75%	0	0%			85
3	0	0%	0	0%	0	0%	0	0%	115	57%	9	4%	77	38%	0	0%			201
4	0	0%	0	0%	0	0%	0	0%	61	27%	59	26%	109	48%	0	0%			229
5	0	0%	0	0%	0	0%	0	0%	109	31%	158	45%	84	24%	0	0%			351
6	0	0%	0	0%	0	0%	0	0%	25	7%	222	64%	98	28%	0	0%			345
7	0	0%	0	0%	0	0%	0	0%	2	1%	259	81%	60	19%	0	0%			321
8	0	0%	0	0%	0	0%	278	89%	0	0%	0	0%	0	0%	35	11%			313
9	0	0%	0	0%	0	0%	166	82%	0	0%	0	0%	0	0%	36	18%			202
10	0	0%	0	0%	0	0%	251	89%	0	0%	0	0%	0	0%	31	11%			282
11	0	0%	0	0%	0	0%	285	93%	0	0%	0	0%	0	0%	22	7%			307
12	0	0%	0	0%	0	0%	230	92%	0	0%	0	0%	0	0%	20	8%			250
13	0	0%	0	0%	0	0%	156	98%	0	0%	0	0%	0	0%	4	3%			160
14	0	0%	0	0%	0	0%	234	92%	0	0%	0	0%	0	0%	21	8%			255
15	0	0%	0	0%	0	0%	184	96%	0	0%	0	0%	0	0%	7	4%			191
16	0	0%	0	0%	0	0%	251	98%	0	0%	0	0%	0	0%	5	2%			256
17	0	0%	0	0%	0	0%	255	99%	0	0%	0	0%	0	0%	3	1%			258
18	0	0%	0	0%	0	0%	191	98%	0	0%	0	0%	0	0%	4	2%			195
19	0	0%	0	0%	0	0%	227	100%	0	0%	0	0%	0	0%	0	0%			227
20	0	0%	0	0%	0	0%	239	100%	0	0%	0	0%	0	0%	0	0%			239
21	0	0%	0	0%	0	0%	208	100%	0	0%	0	0%	0	0%	0	0%			208
22	0	0%	0	0%	0	0%	109	100%	0	0%	0	0%	0	0%	0	0%			109
23	0	0%	0	0%	1	1%	150	99%	0	0%	0	0%	0	0%	0	0%			151
24	0	0%	0	0%	2	1%	180	99%	0	0%	0	0%	0	0%	0	0%			182
25	0	0%	0	0%	0	0%	65	100%	0	0%	0	0%	0	0%	0	0%			65
26	0	0%	1	1%	1	1%	154	99%	0	0%	0	0%	0	0%	0	0%			156
27	0	0%	4	7%	7	11%	50	82%	0	0%	0	0%	0	0%	0	0%			61
28	0	0%	0	0%	29	59%	20	41%	0	0%	0	0%	0	0%	0	0%			49
29	0	0%	11	15%	12	17%	49	68%	0	0%	0	0%	0	0%	0	0%			72
30	0	0%	7	12%	13	22%	40	67%	0	0%	0	0%	0	0%	0	0%			60
31	0	0%	0	0%	46	61%	29	39%	0	0%	0	0%	0	0%	0	0%			75
32	8	24%	0	0%	0	0%	25	76%	0	0%	0	0%	0	0%	0	0%			33
33	16	94%	0	0%	0	0%	1	6%	0	0%	0	0%	0	0%	0	0%			17
COLUMN TOTALS:	24		23		111		4027		383		712		698		186		1416	129	6164
PERCENTAGE: ALL CARS:	0%		0%		1%		52%		5%		9%		9%		2%		18%	2%	
EXCEPT HOLD & UNEXP:	0%		0%		2%		65%		6%		12%		11%		3%				

SUMMARY: JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 & 23, 1971
PERFORMANCE TABLE: ALL EMPTY CARS VERSUS ACTUAL YARD TIME

ACTUAL YARD TIME	CARS ADVANCED DUE TO: EARLY ARR EMP	%	YARD MOVE EMP	%	LATE DEP EMP	%	CARS ON SCHEDULE DUE TO: NORMAL EMP	%	YARD MOVE EMP	%	LATE DEP EMP	%	CARS DELAYED DUE TO: LATE ARR EMP	%	LATE HUMP EMP	%	OB BUILDUP EMP	OTHER EMP	TOTAL
1	0	0%	0	0%	0	0%	0	0%	1	1%	0	0%	171	99%	0	0%			172
2	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	52	100%	0	0%			52
3	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	53	100%	0	0%			53
4	0	0%	0	0%	0	0%	0	0%	0	0%	10	14%	62	86%	0	0%			72
5	0	0%	0	0%	0	0%	0	0%	1	1%	10	10%	92	89%	0	0%			103
6	0	0%	0	0%	0	0%	0	0%	0	0%	4	4%	85	96%	0	0%			89
7	0	0%	0	0%	0	0%	0	0%	0	0%	31	32%	66	68%	0	0%			97
8	0	0%	0	0%	0	0%	19	53%	0	0%	0	0%	0	0%	17	47%			36
9	0	0%	0	0%	0	0%	28	32%	0	0%	0	0%	0	0%	59	68%			87
10	0	0%	0	0%	0	0%	70	84%	0	0%	0	0%	0	0%	13	16%			83
11	0	0%	0	0%	0	0%	117	85%	0	0%	0	0%	0	0%	21	15%			138
12	0	0%	0	0%	0	0%	41	60%	0	0%	0	0%	0	0%	27	40%			68
13	0	0%	0	0%	0	0%	28	44%	0	0%	0	0%	0	0%	36	56%			64
14	0	0%	0	0%	0	0%	55	86%	0	0%	0	0%	0	0%	9	14%			64
15	0	0%	0	0%	0	0%	118	94%	0	0%	0	0%	0	0%	8	6%			126
16	0	0%	0	0%	0	0%	53	59%	0	0%	0	0%	0	0%	37	41%			90
17	0	0%	0	0%	0	0%	137	94%	0	0%	0	0%	0	0%	8	6%			145
18	0	0%	0	0%	0	0%	74	89%	0	0%	0	0%	0	0%	9	11%			83
19	0	0%	0	0%	0	0%	76	100%	0	0%	0	0%	0	0%	0	0%			76
20	0	0%	0	0%	0	0%	64	100%	0	0%	0	0%	0	0%	0	0%			64
21	0	0%	0	0%	0	0%	69	100%	0	0%	0	0%	0	0%	0	0%			69
22	0	0%	0	0%	1	1%	82	99%	0	0%	0	0%	0	0%	0	0%			83
23	0	0%	0	0%	0	0%	67	100%	0	0%	0	0%	0	0%	0	0%			67
24	0	0%	0	0%	7	5%	134	95%	0	0%	0	0%	0	0%	0	0%			141
25	0	0%	0	0%	38	35%	70	65%	0	0%	0	0%	0	0%	0	0%			108
26	0	0%	0	0%	4	4%	99	96%	0	0%	0	0%	0	0%	0	0%			103
27	0	0%	3	6%	1	2%	44	92%	0	0%	0	0%	0	0%	0	0%			48
28	0	0%	0	0%	1	2%	40	98%	0	0%	0	0%	0	0%	0	0%			41
29	0	0%	0	0%	0	0%	53	100%	0	0%	0	0%	0	0%	0	0%			53
30	0	0%	0	0%	0	0%	39	100%	0	0%	0	0%	0	0%	0	0%			39
31	0	0%	0	0%	1	3%	38	95%	0	0%	1	3%	0	0%	0	0%			40
32	0	0%	0	0%	0	0%	14	100%	0	0%	0	0%	0	0%	0	0%			14
33	1	25%	0	0%	0	0%	3	75%	0	0%	0	0%	0	0%	0	0%			4
COLUMN TOTALS:	1		3		53		1632		2		55		581		244		2711	173	2571
PERCENTAGE: ALL CARS:	0%		0%		1%		30%		0%		1%		11%		4%		50%	3%	
EXCEPT HOLD & UNEXP:	0%		0%		2%		63%		0%		2%		23%		9%				

SUMMARY: JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 & 23, 1971
PERFORMANCE TABLE: EASTBOUND LOADED CARS VERSUS SCHEDULED YARD TIME

SCHEDULED YARD TIME	CARS ADVANCED DUE TO: EARLY ARR LDS	%	YARD MOVE LDS	%	LATE DEP LDS	%	CARS ON SCHEDULE DUE TO: NORMAL LDS	%	YARD MOVE LDS	%	LATE DEP LDS	%	CARS DELAYED DUE TO: LATE ARR LDS	%	LATE HUMP LDS	%	OB BUILDUP LDS	OTHER LDS	ROW TOTAL
8	0	0%	0	0%	0	0%	39	9%	207	48%	107	25%	72	17%	9	2%			434
9	0	0%	0	0%	0	0%	59	29%	25	12%	74	36%	29	14%	16	8%			203
10	0	0%	0	0%	0	0%	136	36%	38	10%	143	38%	59	16%	3	1%			379
11	0	0%	0	0%	0	0%	198	45%	31	7%	175	40%	29	7%	9	2%			442
12	0	0%	0	0%	0	0%	199	58%	7	2%	76	22%	52	15%	7	2%			341
13	0	0%	0	0%	0	0%	153	57%	26	10%	19	7%	70	26%	0	0%			268
14	0	0%	0	0%	0	0%	191	83%	19	8%	2	1%	9	4%	8	3%			229
15	0	0%	0	0%	1	0%	250	80%	19	6%	14	4%	28	9%	0	0%			312
16	0	0%	0	0%	0	0%	150	72%	9	4%	20	10%	27	13%	2	1%			208
17	0	0%	0	0%	0	0%	99	71%	0	0%	9	6%	13	9%	18	13%			139
18	0	0%	0	0%	0	0%	58	97%	2	3%	0	0%	0	0%	0	0%			60
19	0	0%	0	0%	0	0%	112	69%	0	0%	14	9%	26	16%	10	6%			162
20	0	0%	0	0%	0	0%	116	93%	0	0%	9	7%	0	0%	0	0%			125
21	0	0%	0	0%	4	2%	187	97%	0	0%	1	1%	0	0%	0	0%			192
22	0	0%	0	0%	0	0%	189	99%	0	0%	0	0%	0	0%	2	1%			191
23	0	0%	1	1%	0	0%	183	99%	0	0%	0	0%	0	0%	0	0%			184
24	0	0%	0	0%	4	4%	97	96%	0	0%	0	0%	0	0%	0	0%			101
25	0	0%	0	0%	8	4%	170	96%	0	0%	0	0%	0	0%	0	0%			178
26	0	0%	0	0%	0	0%	144	100%	0	0%	0	0%	0	0%	0	0%			144
27	0	0%	5	5%	0	0%	118	95%	0	0%	0	0%	0	0%	0	0%			124
28	0	0%	0	0%	30	46%	35	54%	0	0%	0	0%	0	0%	0	0%			65
29	0	0%	11	46%	3	13%	10	42%	0	0%	0	0%	0	0%	0	0%			24
30	0	0%	0	0%	6	19%	26	81%	0	0%	0	0%	0	0%	0	0%			32
31	0	0%	2	3%	40	66%	19	31%	0	0%	0	0%	0	0%	0	0%			61
COLUMN TOTALS:	0		20		96		2938		383		663		414		84		464	59	4598
PERCENTAGE:																			
ALL CARS:	0%		0%		2%		57%		7%		13%		8%		2%		9%	1%	
EXCEPT HOLD & UNEXP*	0%		0%		2%		64%		8%		14%		9%		2%				

SUMMARY: JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 & 23, 1971
PERFORMANCE TABLE: EASTBOUND EMPTY CARS VERSUS SCHEDULED YARD TIME

SCHEDULED YARD TIME	CARS ADVANCED DUE TO: EARLY ARR EMP	%	YARD MOVE EMP	%	LATE DEP EMP	%	CARS ON SCHEDULE DUE TO: NORMAL EMP	%	YARD MOVE EMP	%	LATE DEP EMP	%	CARS DELAYED LATE ARR EMP	%	LATE HUMP EMP	%	OB BUILDUP EMP	OTHER EMP	ROW TOTAL
8	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	3	50%	3	50%			6
9	0	0%	0	0%	0	0%	4	12%	0	0%	0	0%	13	38%	17	50%			34
10	0	0%	0	0%	0	0%	9	56%	0	0%	4	25%	3	19%	0	0%			16
11	0	0%	0	0%	0	0%	5	56%	1	11%	1	11%	2	22%	0	0%			9
12	0	0%	0	0%	0	0%	3	17%	0	0%	10	56%	5	28%	0	0%			18
13	0	0%	0	0%	0	0%	7	37%	0	0%	2	11%	9	47%	1	5%			19
14	0	0%	0	0%	0	0%	19	68%	0	0%	3	11%	0	0%	6	21%			28
15	0	0%	0	0%	0	0%	28	76%	0	0%	4	11%	5	14%	0	0%			37
16	0	0%	0	0%	0	0%	10	71%	1	7%	0	0%	0	0%	3	21%			14
17	0	0%	0	0%	0	0%	25	89%	0	0%	1	4%	2	7%	0	0%			28
18	0	0%	0	0%	0	0%	5	100%	0	0%	0	0%	0	0%	0	0%			5
19	0	0%	0	0%	0	0%	4	100%	0	0%	0	0%	0	0%	0	0%			4
20	0	0%	0	0%	0	0%	5	56%	0	0%	3	33%	0	0%	1	11%			9
21	0	0%	0	0%	0	0%	16	100%	0	0%	0	0%	0	0%	0	0%			16
22	0	0%	0	0%	0	0%	7	100%	0	0%	0	0%	0	0%	0	0%			7
23	0	0%	0	0%	0	0%	22	100%	0	0%	0	0%	0	0%	0	0%			22
24	0	0%	0	0%	1	33%	2	67%	0	0%	0	0%	0	0%	0	0%			3
25	0	0%	0	0%	0	0%	8	100%	0	0%	0	0%	0	0%	0	0%			8
26	0	0%	0	0%	0	0%	6	100%	0	0%	0	0%	0	0%	0	0%			6
27	0	0%	3	14%	0	0%	18	86%	0	0%	0	0%	0	0%	0	0%			21
28	0	0%	0	0%	0	0%	12	100%	0	0%	0	0%	0	0%	0	0%			12
29	0	0%	0	0%	0	0%	27	100%	0	0%	0	0%	0	0%	0	0%			27
30	0	0%	0	0%	0	0%	2	100%	0	0%	0	0%	0	0%	0	0%			2
31	0	0%	0	0%	1	100%	0	0%	0	0%	0	0%	0	0%	0	0%			1
COLUMN TOTALS:	0		3		2		244		2		28		42		31		136	10	352
PERCENTAGE:																			
ALL CARS:	0%		1%		0%		49%		0%		6%		8%		6%		27%	2%	
EXCEPT HOLD & UNEXP:	0%		1%		1%		69%		1%		8%		12%		9%				

SUMMARY: JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 & 23, 1971
PERFORMANCE TABLE: WESTBOUND LOADED CARS VERSUS SCHEDULED YARD TIME

SCHEDULED YARD TIME	CARS ADVANCED DUE TO: EARLY ARR		YARD MOVE		LATE DEP		CARS ON SCHEDULE DUE TO: NORMAL		YARD MOVE		LATE DEP		CARS DELAYED DUE TO: LATE ARR		LATE HUMP		OB BUILDUP	OTHER	ROW TOTAL
	LDS	%	LDS	%	LDS	%	LDS	%	LDS	%	LDS	%	LDS	%	LDS	%	LDS	LDS	
9	C	0%	C	0%	0	C%	C	0%	0	0%	C	0%	15	100%	0	0%			15
3	C	0%	0	0%	0	0%	G	0%	0	0%	0	0%	11	61%	7	39%			18
10	C	0%	C	0%	C	C%	14	34%	0	0%	0	0%	19	46%	8	20%			41
11	C	0%	0	0%	0	C%	11	22%	0	0%	11	22%	29	57%	0	0%			51
12	C	0%	0	0%	0	C%	9	60%	0	0%	1	7%	4	27%	1	7%			15
13	C	0%	0	0%	0	C%	34	85%	0	0%	0	C%	6	15%	0	0%			40
14	C	0%	0	0%	0	C%	0	0%	0	0%	2	25%	6	75%	0	0%			8
15	C	0%	0	0%	C	C%	6	22%	0	0%	0	0%	17	63%	4	15%			27
16	C	0%	0	0%	0	C%	9	82%	0	0%	0	0%	2	18%	0	0%			11
17	C	0%	0	0%	0	C%	29	85%	0	0%	0	0%	5	15%	C	0%			34
18	C	0%	0	0%	C	0%	17	94%	0	0%	1	6%	0	0%	0	0%			18
19	0	0%	0	0%	0	0%	11	79%	0	C%	C	0%	3	21%	0	0%			14
20	C	0%	0	0%	0	0%	11	100%	0	0%	0	0%	0	0%	0	0%			11
21	C	0%	0	0%	0	0%	14	50%	0	0%	0	0%	14	50%	0	0%			28
22	C	C%	0	0%	0	C%	8	53%	C	0%	0	0%	7	47%	C	0%			15
23	C	0%	0	0%	0	0%	7	100%	0	0%	C	C%	0	0%	0	0%			7
24	C	0%	0	0%	0	C%	10	100%	0	C%	0	C%	0	0%	0	0%			10
25	C	0%	0	0%	0	0%	9	100%	G	C%	0	0%	0	0%	0	0%			9
26	C	0%	0	0%	0	C%	18	100%	0	0%	0	0%	0	0%	0	0%			18
27	C	0%	0	0%	0	0%	19	100%	0	0%	0	0%	0	0%	0	0%			19
28	C	0%	0	0%	0	C%	18	100%	0	0%	0	0%	0	0%	0	0%			18
29	C	0%	0	0%	0	0%	21	100%	0	0%	0	0%	0	0%	0	0%			21
30	11	30%	0	0%	0	C%	26	70%	0	0%	0	0%	0	0%	0	0%			37
31	3	33%	0	0%	1	11%	5	56%	0	0%	0	0%	0	0%	0	0%			9
COLUMN TOTALS:	14		0		1		306		0		15		138		20		486	25	494
PERCENTAGE:																			
ALL CARS:	1%		0%		0%		30%		0%		1%		14%		2%		48%	2%	
EXCEPT HOLD & UNEXP:	3%		0%		0%		62%		0%		3%		28%		4%				

SUMMARY: JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 & 23, 1971
PERFORMANCE TABLE: WESTBOUND EMPTY CARS VERSUS SCHEDULED YARD TIME

SCHEDULED YARD TIME	CARS ADVANCED DUE TO: EARLY ARR EMP	%	YARD MOVE EMP	%	LATE DEP EMP	%	CARS ON SCHEDULE DUE TO: NORMAL EMP	%	YARD MOVE EMP	%	LATE DEP EMP	%	CARS DELAYED DUE TO: LATE ARR EMP	%	LATE HUMP EMP	%	OB BUILDUP EMP	OTHER EMP	ROW TOTAL
8	0	0%	0	0%	0	0%	7	9%	0	0%	0	0%	71	91%	0	0%			78
9	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	34	55%	28	45%			62
10	0	0%	0	0%	0	0%	2	6%	0	0%	0	0%	28	80%	5	14%			35
11	0	0%	0	0%	0	0%	22	16%	0	0%	12	9%	101	74%	1	1%			136
12	0	0%	0	0%	0	0%	2	3%	0	0%	2	3%	52	84%	6	10%			62
13	0	0%	0	0%	0	0%	28	46%	0	%	0	0%	23	38%	10	16%			61
14	0	0%	0	0%	0	0%	3	8%	0	0%	0	0%	29	81%	4	11%			36
15	0	0%	0	0%	0	0%	31	55%	0	0%	0	0%	17	30%	8	14%			56
16	0	0%	0	0%	0	0%	16	40%	0	0%	2	5%	22	55%	0	0%			40
17	0	0%	0	0%	0	0%	67	84%	0	0%	0	0%	13	16%	0	0%			80
18	0	0%	0	0%	0	0%	63	68%	0	0%	0	0%	26	28%	4	4%			93
19	0	0%	0	0%	0	0%	10	36%	0	0%	0	0%	18	64%	0	0%			28
20	0	0%	0	0%	0	0%	48	52%	0	0%	0	0%	13	14%	32	34%			93
21	0	0%	0	0%	0	0%	20	83%	0	0%	0	0%	4	17%	0	0%			24
22	0	0%	0	0%	0	0%	12	55%	0	0%	0	0%	10	45%	0	0%			22
23	0	0%	0	0%	0	0%	26	100%	0	0%	0	0%	0	0%	0	0%			26
24	0	0%	0	0%	0	0%	112	99%	0	0%	0	0%	0	0%	1	1%			113
25	0	0%	0	0%	0	0%	52	100%	0	0%	0	0%	0	0%	0	0%			52
26	0	0%	0	0%	0	0%	73	99%	0	0%	0	0%	0	0%	1	1%			74
27	0	0%	0	0%	0	0%	37	100%	0	0%	0	0%	0	0%	0	0%			37
28	0	0%	0	0%	0	0%	52	100%	0	0%	0	0%	0	0%	0	0%			52
29	0	0%	0	0%	34	41%	48	59%	0	0%	0	0%	0	0%	0	0%			82
30	0	0%	0	0%	0	0%	24	100%	0	0%	0	0%	0	0%	0	0%			24
31	1	3%	0	0%	2	6%	33	92%	0	0%	0	0%	0	0%	0	0%			36
COLUMN TOTALS:	1		0		56		788		0		16		461		100		1983	94	1402
PERCENTAGE: ALL CARS:	0%		0%		1%		23%		0%		0%		13%		3%		57%	3%	
EXCEPT HOLD & UNEXP:	0%		0%		3%		56%		0%		1%		33%		7%				

SUMMARY: JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 & 23, 1971
PERFORMANCE TABLE: LOCAL LOADED CARS VERSUS SCHEDULED YARD TIME

SCHEDULED YARD TIME	CARS ADVANCED DUE TO: EARLY ARR LDS	%	YARD MOVE LDS	%	LATE DEP LDS	%	CARS ON SCHEDULE DUE TO: NORMAL LDS	%	YARD MOVE LDS	%	CARS DELAYED DUE TO: LATE DEP LDS	%	LATE ARR LDS	%	LATE HUMP LDS	%	OB BUILDUP LDS	OTHER LDS	ROW TOTAL
8	0	0%	0	0%	0	0%	2	6%	0	0%	8	23%	12	34%	13	37%			35
9	0	0%	0	0%	0	0%	5	15%	0	0%	0	0%	16	47%	13	38%			34
10	0	0%	0	0%	0	0%	14	22%	0	0%	2	3%	37	58%	11	17%			64
11	0	0%	0	0%	0	0%	13	38%	0	0%	4	12%	9	26%	8	24%			34
12	0	0%	0	0%	0	0%	23	40%	0	0%	6	10%	25	43%	4	7%			58
13	0	0%	0	0%	0	0%	38	76%	0	0%	4	8%	7	14%	1	2%			50
14	0	0%	0	0%	0	0%	13	57%	0	0%	0	0%	1	4%	9	39%			23
15	0	0%	0	0%	0	0%	10	34%	0	0%	0	0%	15	52%	4	14%			29
16	0	0%	0	0%	0	0%	35	47%	0	0%	9	12%	21	28%	10	13%			75
17	0	0%	0	0%	0	0%	37	84%	0	0%	0	0%	1	2%	6	14%			44
18	0	0%	0	0%	0	0%	26	96%	0	0%	0	0%	0	0%	1	4%			27
19	0	0%	0	0%	0	0%	24	92%	0	0%	0	0%	2	8%	0	0%			26
20	0	0%	0	0%	1	3%	38	97%	0	0%	0	0%	0	0%	0	0%			39
21	0	0%	0	0%	0	0%	62	98%	0	0%	1	2%	0	0%	0	0%			63
22	0	0%	0	0%	1	2%	50	98%	0	0%	0	0%	0	0%	0	0%			51
23	0	0%	0	0%	0	0%	58	97%	0	0%	0	0%	0	0%	2	3%			60
24	0	0%	0	0%	0	0%	50	100%	0	0%	0	0%	0	0%	0	0%			50
25	0	0%	0	0%	5	9%	52	91%	0	0%	0	0%	0	0%	0	0%			57
26	0	0%	2	3%	0	0%	57	97%	0	0%	0	0%	0	0%	0	0%			59
27	0	0%	1	2%	0	0%	53	98%	0	0%	0	0%	0	0%	0	0%			54
28	0	0%	0	0%	7	18%	32	82%	0	0%	0	0%	0	0%	0	0%			39
29	1	2%	0	0%	4	7%	55	92%	0	0%	0	0%	0	0%	0	0%			60
30	0	0%	0	0%	0	0%	18	100%	0	0%	0	0%	0	0%	0	0%			18
31	9	29%	0	0%	4	13%	18	58%	0	0%	0	0%	0	0%	0	0%			31
COLUMN TOTALS:	10		3		22		783		0		34		146		82		46	45	1072
PERCENTAGE:																			
ALL CARS:	1%		0%		2%		50%		0%		2%		9%		5%		29%	3%	
EXCEPT HOLD & UNEXP:	1%		0%		2%		73%		0%		3%		14%		8%				

SUMMARY: JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 & 23, 197
PERFORMANCE TABLE: LOCAL EMPTY CARS VERSUS SCHEDULED YARD TIME

SCHEDULED YARD TIME	CARS ADVANCED DUE TO: EARLY ARR EMP	%	YARD MOVE EMP	%	LATE DEP EMP	%	CARS ON SCHEDULE DUE TO: NORMAL EMP	%	YARD MOVE EMP	%	LATE DEP EMP	%	CARS DELAYED DUE TO: LATE ARR EMP	%	LATE HUMP EMP	%	OB BUILDUP EMP	OTHER EMP	ROW TOTAL
8	0	0%	0	0%	0	0%	8	20%	0	0%	9	22%	24	59%	0	0%			41
9	0	0%	0	0%	0	0%	5	29%	0	0%	0	0%	7	41%	5	29%			17
10	0	0%	0	0%	0	0%	12	55%	0	0%	0	0%	7	32%	3	14%			22
11	0	0%	0	0%	0	0%	26	84%	0	0%	0	0%	0	0%	5	16%			31
12	0	0%	0	0%	0	0%	8	28%	0	0%	2	7%	16	55%	3	10%			29
13	0	0%	0	0%	0	0%	11	23%	0	0%	0	0%	1	2%	35	74%			47
14	0	0%	0	0%	0	0%	4	24%	0	0%	0	0%	1	6%	12	71%			17
15	0	0%	0	0%	0	0%	53	95%	0	0%	0	0%	1	2%	2	4%			56
16	0	0%	0	0%	0	0%	4	13%	0	0%	0	0%	2	6%	26	81%			32
17	0	0%	0	0%	0	0%	26	55%	0	0%	0	0%	15	32%	6	13%			47
18	0	0%	0	0%	0	0%	47	98%	0	0%	0	0%	0	0%	1	2%			48
19	0	0%	0	0%	0	0%	13	81%	0	0%	0	0%	3	19%	0	0%			16
20	0	0%	0	0%	4	7%	52	93%	0	0%	0	0%	0	0%	0	0%			56
21	0	0%	0	0%	0	0%	26	96%	0	0%	0	0%	1	4%	0	0%			27
22	0	0%	0	0%	1	2%	36	78%	0	0%	0	0%	0	0%	9	20%			46
23	0	0%	0	0%	0	0%	26	100%	0	0%	0	0%	0	0%	0	0%			26
24	0	0%	0	0%	0	0%	38	86%	0	0%	0	0%	0	0%	6	14%			44
25	0	0%	0	0%	0	0%	36	100%	0	0%	0	0%	0	0%	0	0%			36
26	0	0%	0	0%	0	0%	27	100%	0	0%	0	0%	0	0%	0	0%			27
27	0	0%	0	0%	0	0%	48	100%	0	0%	0	0%	0	0%	0	0%			48
28	0	0%	0	0%	6	14%	36	86%	0	0%	0	0%	0	0%	0	0%			42
29	0	0%	0	0%	0	0%	12	100%	0	0%	0	0%	0	0%	0	0%			12
30	0	0%	0	0%	0	0%	24	100%	0	0%	0	0%	0	0%	0	0%			24
31	0	0%	0	0%	4	15%	22	85%	0	0%	0	0%	0	0%	0	0%			26
COLUMN TOTALS:	0		0		15		600		0		11		78		113		592	69	817
PERCENTAGE: ALL CARS:	0%		0%		1%		41%		0%		1%		5%		8%		40%	5%	
EXCEPT HOLD & UNEXP:	0%		0%		2%		73%		0%		1%		10%		14%				

SUMMARY: JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 & 23, 1971
PERFORMANCE TABLE: EASTBOUND LOADED CARS VERSUS ACTUAL YARD TIME

ACTUAL YARD TIME	CARS ADVANCED DUE TO: EARLY ARR LDS	%	YARD MOVE LDS	%	LATE DEP LDS	%	CARS ON SCHEDULE DUE TO: NORMAL LDS	%	YARD MOVE LDS	%	CARS DELAYED DUE TO: LATE DEP LDS	%	LATE ARR LDS	%	LATE HUMP LDS	%	JB BUILDUP LDS	OTHER LDS	TOTAL
1	C	0%	0	0%	0	0%	C	0%	55	31%	0	0%	122	69%	0	0%			177
2	C	0%	0	0%	0	0%	C	0%	16	26%	4	6%	42	68%	0	0%			62
3	C	0%	0	0%	C	0%	C	0%	115	76%	3	2%	34	22%	C	0%			152
4	C	0%	C	0%	0	0%	0	0%	61	30%	54	27%	86	43%	C	0%			201
5	C	0%	C	0%	C	0%	C	0%	109	35%	157	51%	44	14%	C	0%			310
6	C	0%	0	0%	0	0%	0	0%	25	9%	219	75%	48	16%	C	0%			292
7	C	0%	C	0%	0	0%	0	0%	2	1%	226	85%	38	14%	C	0%			266
8	C	0%	0	0%	C	0%	267	93%	0	0%	C	0%	0	0%	19	7%			286
9	C	0%	0	0%	0	0%	155	91%	0	0%	0	0%	0	0%	15	9%			170
10	C	0%	0	0%	0	0%	212	94%	0	0%	C	0%	0	0%	13	6%			225
11	C	0%	0	0%	0	0%	250	95%	0	0%	C	0%	0	0%	13	5%			263
12	C	0%	0	0%	0	0%	189	95%	0	0%	0	0%	0	0%	9	5%			198
13	C	0%	0	0%	0	0%	98	96%	0	0%	C	0%	0	0%	4	4%			102
14	C	0%	0	0%	0	0%	200	95%	0	0%	C	0%	0	0%	10	5%			210
15	C	0%	0	0%	C	0%	153	99%	0	0%	0	0%	0	0%	1	1%			154
16	C	0%	0	0%	0	0%	170	100%	0	0%	C	0%	0	0%	0	0%			170
17	C	0%	0	0%	0	0%	200	100%	0	0%	C	0%	0	0%	0	0%			200
18	C	0%	0	0%	0	0%	130	100%	C	0%	0	0%	0	0%	0	0%			130
19	C	0%	0	0%	0	0%	177	100%	0	0%	C	0%	0	0%	0	0%			177
20	C	0%	0	0%	0	0%	163	100%	0	0%	0	0%	0	0%	0	0%			163
21	C	0%	0	0%	C	0%	130	100%	0	0%	0	0%	0	0%	0	0%			130
22	C	0%	0	0%	0	0%	95	100%	0	0%	C	0%	0	0%	0	0%			95
23	C	0%	0	0%	1	1%	108	99%	0	0%	0	0%	0	0%	0	0%			109
24	0	0%	0	0%	0	0%	108	100%	0	0%	C	0%	0	0%	0	0%			108
25	C	0%	0	0%	0	0%	25	100%	0	0%	0	0%	0	0%	0	0%			25
26	C	0%	1	2%	C	0%	54	98%	0	0%	C	0%	0	0%	0	0%			55
27	0	0%	3	25%	3	25%	6	50%	0	0%	0	0%	0	0%	0	0%			12
28	0	0%	0	0%	26	100%	0	0%	0	0%	0	0%	0	0%	0	0%			26
29	C	0%	11	32%	7	21%	16	47%	0	0%	C	0%	0	0%	0	0%			34
30	C	0%	5	16%	13	41%	14	44%	0	0%	C	0%	0	0%	0	0%			32
31	C	0%	0	0%	46	78%	13	22%	0	0%	0	0%	0	0%	0	0%			59
32	0	0%	0	0%	0	0%	5	100%	0	0%	0	0%	0	0%	0	0%			5
33	C	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%			0
COLUMN TOTALS:	C		20		96		2938		38_		663		414		84		469	59	4598
PERCENTAGE: ALL CARS:	0%		0%		2%		57%		7%		13%		8%		2%		9%	1%	
EXCEPT HOLD & UNEXP:	0%		0%		2%		64%		8%		14%		9%		2%				

SUMMARY: JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 & 23, 1971
PERFORMANCE TABLE: EASTBOUND EMPTY CARS VERSUS ACTUAL YARD TIME

ACTUAL YARD TIME	CARS ADVANCED DUE TO: EARLY ARR EMP	%	YARD MOVE EMP	%	LATE DEP EMP	%	CARS ON SCHEDULE DUE TO: NORMAL EMP	%	YARD MOVE EMP	%	LATE DEP EMP	%	CARS DELAYED DUE TO: LATE ARR EMP	%	LATE HUMP EMP	%	OB BUILDUP EMP	OTHER EMP	TOTAL
1	0	0%	0	0%	0	0%	0	0%	1	4%	0	0%	23	96%	0	0%			24
2	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	100%	0	0%			1
3	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	100%	0	0%			1
4	0	0%	0	0%	0	0%	0	0%	0	0%	4	44%	5	56%	0	0%			9
5	0	0%	0	0%	0	0%	0	0%	1	7%	8	57%	5	36%	0	0%			14
6	0	0%	0	0%	0	0%	0	0%	0	0%	2	67%	1	33%	0	0%			3
7	0	0%	0	0%	0	0%	0	0%	0	0%	14	70%	6	30%	0	0%			20
8	0	0%	0	0%	0	0%	7	70%	0	0%	0	0%	0	0%	3	30%			10
9	0	0%	0	0%	0	0%	10	36%	0	0%	0	0%	0	0%	18	64%			28
10	0	0%	0	0%	0	0%	27	100%	0	0%	0	0%	0	0%	0	0%			27
11	0	0%	0	0%	0	0%	17	77%	0	0%	0	0%	0	0%	5	23%			22
12	0	0%	0	0%	0	0%	4	67%	0	0%	0	0%	0	0%	2	33%			6
13	0	0%	0	0%	0	0%	4	57%	0	0%	0	0%	0	0%	3	43%			7
14	0	0%	0	0%	0	0%	23	100%	0	0%	0	0%	0	0%	0	0%			23
15	0	0%	0	0%	0	0%	5	100%	0	0%	0	0%	0	0%	0	0%			5
16	0	0%	0	0%	0	0%	10	100%	0	0%	0	0%	0	0%	0	0%			10
17	0	0%	0	0%	0	0%	29	100%	0	0%	0	0%	0	0%	0	0%			29
18	0	0%	0	0%	0	0%	3	100%	0	0%	0	0%	0	0%	0	0%			3
19	0	0%	0	0%	0	0%	7	100%	0	0%	0	0%	0	0%	0	0%			7
20	0	0%	0	0%	0	0%	2	100%	0	0%	0	0%	0	0%	0	0%			2
21	0	0%	0	0%	0	0%	14	100%	0	0%	0	0%	0	0%	0	0%			14
22	0	0%	0	0%	0	0%	11	100%	0	0%	0	0%	0	0%	0	0%			11
23	0	0%	0	0%	0	0%	11	100%	0	0%	0	0%	0	0%	0	0%			11
24	0	0%	0	0%	0	0%	6	100%	0	0%	0	0%	0	0%	0	0%			6
25	0	0%	0	0%	0	0%	11	100%	0	0%	0	0%	0	0%	0	0%			11
26	0	0%	0	0%	0	0%	15	100%	0	0%	0	0%	0	0%	0	0%			15
27	0	0%	3	75%	1	25%	0	0%	0	0%	0	0%	0	0%	0	0%			4
28	0	0%	0	0%	0	0%	2	100%	0	0%	0	0%	0	0%	0	0%			2
29	0	0%	0	0%	0	0%	13	100%	0	0%	0	0%	0	0%	0	0%			13
30	0	0%	0	0%	0	0%	2	100%	0	0%	0	0%	0	0%	0	0%			2
31	0	0%	0	0%	1	8%	11	92%	0	0%	0	0%	0	0%	0	0%			12
32	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%			0
33	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%			0
COLUMN TOTALS:	0		3		2		244		2		28		42		31		136	10	352
PERCENTAGE: ALL CARS:	0%		1%		0%		49%		0%		6%		8%		6%		27%	2%	
EXCEPT HOLD & UNEXP:	0%		1%		1%		69%		1%		8%		12%		9%				

SUMMARY: JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 & 23, 1971
PERFORMANCE TABLE: WESTBOUND LOADED CARS VERSUS ACTUAL YARD TIME

ACTUAL YARD TIME	CARS ADVANCED DUE TO: EARLY ARR		YARD MOVE		LATE DEP		CARS ON SCHEDULE DUE TO: NORMAL		YARD MOVE		LATE DEP		CARS DELAYED DUE TO: LATE ARR		LATE HUMP		OB BUILDUP	OTHER	TOTAL
	LDS	%	LDS	%	LDS	%	LDS	%	LDS	%	LDS	%	LDS	%	LDS	%	LDS	LDS	
1	C	0%	C	0%	0	C%	0	0%	0	C%	C	0%	28	100%	C	0%			28
2	C	0%	0	0%	0	0%	C	0%	0	0%	0	C%	10	100%	0	0%			10
3	C	0%	C	0%	0	C%	C	0%	0	C%	C	0%	17	100%	0	0%			17
4	C	0%	0	0%	0	C%	C	0%	0	C%	1	25%	3	75%	0	0%			4
5	C	0%	0	0%	0	0%	0	0%	0	0%	C	0%	34	100%	0	0%			34
6	C	0%	C	0%	C	0%	C	0%	0	C%	3	C%	29	91%	0	0%			32
7	C	0%	0	0%	0	0%	0	0%	0	C%	11	39%	17	61%	0	0%			28
8	C	0%	0	0%	C	C%	4	57%	0	0%	0	0%	0	0%	3	43%			7
9	C	0%	0	0%	C	C%	5	42%	0	0%	0	0%	0	0%	7	58%			12
10	C	0%	0	0%	0	0%	9	56%	0	C%	C	0%	0	0%	7	44%			16
11	C	0%	0	0%	0	0%	22	88%	0	0%	0	0%	0	0%	3	12%			25
12	C	0%	0	0%	0	0%	20	100%	0	C%	0	0%	0	0%	0	0%			20
13	C	0%	0	0%	0	C%	39	100%	0	0%	0	0%	0	0%	0	0%			39
14	C	0%	C	0%	0	C%	5	100%	0	0%	C	0%	0	0%	0	0%			5
15	0	0%	0	0%	0	0%	1	100%	0	C%	0	0%	0	0%	0	0%			1
16	C	0%	0	0%	0	0%	17	100%	0	0%	0	0%	0	0%	0	0%			17
17	C	0%	0	0%	0	0%	23	100%	0	C%	0	0%	0	0%	0	0%			23
18	C	0%	0	0%	0	0%	20	100%	0	0%	C	0%	0	0%	0	0%			20
19	C	0%	0	0%	0	0%	9	100%	0	0%	0	0%	0	0%	0	0%			9
20	0	0%	0	0%	0	0%	6	100%	0	C%	C	0%	0	0%	0	0%			6
21	C	0%	0	0%	0	0%	14	100%	0	0%	0	0%	0	0%	0	0%			14
22	C	0%	0	0%	C	C%	1	100%	0	0%	C	0%	0	0%	0	0%			1
23	0	0%	0	0%	0	C%	8	100%	0	0%	C	0%	0	0%	0	0%			8
24	0	0%	C	0%	0	0%	19	100%	0	0%	0	0%	0	0%	0	0%			19
25	C	0%	C	0%	0	C%	10	100%	0	C%	C	C%	0	0%	0	0%			10
26	C	0%	0	0%	0	0%	34	100%	0	0%	C	0%	0	0%	C	0%			34
27	C	0%	C	0%	0	C%	15	100%	0	0%	0	0%	0	0%	0	0%			15
28	C	0%	0	0%	1	7%	14	93%	0	0%	C	0%	0	0%	0	0%			15
29	C	0%	0	0%	0	C%	4	100%	0	0%	0	0%	0	0%	0	0%			4
30	C	0%	0	0%	0	C%	4	100%	0	0%	0	0%	0	0%	0	0%			4
31	C	0%	0	0%	0	0%	1	100%	0	0%	C	0%	0	0%	C	0%			1
32	C	0%	0	0%	0	0%	2	100%	0	0%	0	0%	0	C%	0	0%			2
33	14	100%	0	0%	0	0%	C	0%	0	0%	0	0%	0	0%	0	0%			14
COLUMN TOTALS:	14		0		1		306		[illegible]		15		138		20		486	25	494
PERCENTAGE: ALL CARS:	1%		0%		0%		30%		0%		1%		14%		2%		48%	2%	
EXCEPT HOLD & UNEXP:	3%		0%		0%		62%		0%		3%		28%		4%				

SUMMARY: JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 & 23, 1971
PERFORMANCE TABLE: WESTBOUND EMPTY CARS VERSUS ACTUAL YARD TIME

ACTUAL YARD TIME	CARS ADVANCED DUE TO: EARLY ARR		YARD MOVE		LATE DEP		CARS ON SCHEDULE DUE TO: NORMAL		YARD MOVE		LATE DEP		CARS DELAYED DUE TO: LATE ARR		LATE HUMP		OB BUILDUP	OTHER	TOTAL
	EMP	%	EMP	%	EMP	%	EMP	%	EMP	%	EMP	%	EMP	%	EMP	%	EMP	EMP	
1	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	122	100%	0	0%			122
2	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	51	100%	0	0%			51
3	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	42	100%	0	0%			42
4	0	0%	0	0%	0	0%	0	0%	0	0%	2	3%	59	97%	0	0%			61
5	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	69	100%	0	0%			69
6	0	0%	0	0%	0	0%	0	0%	0	0%	3	5%	59	95%	0	0%			62
7	0	0%	0	0%	0	0%	0	0%	0	0%	14	17%	69	83%	0	0%			83
8	0	0%	0	0%	0	0%	9	50%	0	0%	0	0%	0	0%	9	50%			18
9	0	0%	0	0%	0	0%	13	30%	0	0%	0	0%	0	0%	31	70%			44
10	0	0%	0	0%	0	0%	16	64%	0	0%	0	0%	0	0%	9	36%			25
11	0	0%	0	0%	0	0%	73	87%	0	0%	0	0%	0	0%	11	13%			84
12	0	0%	0	0%	0	0%	20	49%	0	0%	0	0%	0	0%	21	51%			41
13	0	0%	0	0%	0	0%	18	100%	0	0%	0	0%	0	0%	0	0%			18
14	0	0%	0	0%	0	0%	22	100%	0	0%	0	0%	0	0%	0	0%			22
15	0	0%	0	0%	0	0%	26	100%	0	0%	0	0%	0	0%	0	0%			26
16	0	0%	0	0%	0	0%	23	68%	0	0%	0	0%	0	0%	11	32%			34
17	0	0%	0	0%	0	0%	84	100%	0	0%	0	0%	0	0%	0	0%			84
18	0	0%	0	0%	0	0%	22	73%	0	0%	0	0%	0	0%	8	27%			30
19	0	0%	0	0%	0	0%	46	100%	0	0%	0	0%	0	0%	0	0%			46
20	0	0%	0	0%	0	0%	26	100%	0	0%	0	0%	0	0%	0	0%			26
21	0	0%	0	0%	0	0%	22	100%	0	0%	0	0%	0	0%	0	0%			22
22	0	0%	0	0%	0	0%	37	100%	0	0%	0	0%	0	0%	0	0%			37
23	0	0%	0	0%	0	0%	33	100%	0	0%	0	0%	0	0%	0	0%			33
24	0	0%	0	0%	0	0%	99	100%	0	0%	0	0%	0	0%	0	0%			99
25	0	0%	0	0%	35	53%	31	47%	0	0%	0	0%	0	0%	0	0%			66
26	0	0%	0	0%	0	0%	45	100%	0	0%	0	0%	0	0%	0	0%			45
27	0	0%	0	0%	0	0%	17	100%	0	0%	0	0%	0	0%	0	0%			17
28	0	0%	0	0%	1	4%	26	96%	0	0%	0	0%	0	0%	0	0%			27
29	0	0%	0	0%	0	0%	31	100%	0	0%	0	0%	0	0%	0	0%			31
30	0	0%	0	0%	0	0%	22	100%	0	0%	0	0%	0	0%	0	0%			22
31	0	0%	0	0%	0	0%	21	100%	0	0%	0	0%	0	0%	0	0%			21
32	0	0%	0	0%	0	0%	6	100%	0	0%	0	0%	0	0%	0	0%			6
33	1	100%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%			1
COLUMN TOTALS:	1		0		36		788		0		16		461		100		1983	94	1402
PERCENTAGE:																			
ALL CARS:	0%		0%		1%		23%		0%		0%		13%		3%		57%	3%	
EXCEPT HOLD & UNEXP:	0%		0%		3%		56%		0%		1%		33%		7%				

SUMMARY: JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 & 23, 1971
PERFORMANCE TABLE: LOCAL LOADED CARS VERSUS ACTUAL YARD TIME

ACTUAL YARD TIME	CARS ADVANCED DUE TO: EARLY ARR		YARD MOVE		LATE DEP		CARS ON SCHEDULE DUE TO: NORMAL		YARD MOVE		LATE DEP		CARS DELAYED DUE TO: LATE ARR		LATE HUMP		OB BUILDUP	OTHER	TOTAL
	LDS	%	LDS	%	LDS	%	LDS	%	LDS	%	LDS	%	LDS	%	LDS	%	LDS	LDS	
1	C	0%	0	0%	0	0%	C	0%	0	C%	C	C%	56	100%	C	0%			56
2	C	0%	0	0%	C	C%	C	0%	0	C%	1	8%	12	92%	C	0%			13
3	C	0%	0	0%	0	0%	C	0%	C	C%	6	19%	26	81%	0	0%			32
4	C	0%	0	0%	0	C%	0	0%	0	0%	4	17%	20	83%	C	0%			24
5	C	0%	0	0%	0	C%	C	0%	0	0%	1	14%	6	86%	0	0%			7
6	C	0%	0	0%	0	C%	0	0%	0	0%	0	0%	21	100%	0	0%			21
7	C	0%	0	0%	0	0%	0	0%	0	0%	22	81%	5	19%	0	0%			27
8	C	0%	0	0%	C	C%	7	35%	C	C%	C	0%	0	0%	13	65%			20
9	C	0%	0	0%	0	0%	6	30%	0	0%	C	0%	0	0%	14	70%			20
10	C	0%	C	0%	0	C%	30	73%	0	0%	0	0%	0	0%	11	27%			41
11	C	0%	0	0%	0	0%	13	68%	0	0%	C	0%	0	0%	6	32%			19
12	C	0%	0	0%	0	0%	21	66%	0	0%	0	0%	0	0%	11	34%			32
13	C	0%	0	0%	0	0%	19	100%	0	0%	C	0%	0	0%	0	0%			19
14	0	0%	0	0%	0	0%	29	73%	0	0%	C	0%	0	0%	11	28%			40
15	C	0%	C	0%	0	0%	30	83%	0	0%	0	0%	0	0%	6	17%			36
16	C	0%	0	0%	0	0%	64	93%	0	C%	C	0%	0	0%	5	7%			69
17	C	0%	0	0%	0	0%	32	91%	0	0%	C	0%	0	0%	3	9%			35
18	C	0%	0	0%	0	C%	41	91%	0	C%	0	0%	0	0%	4	9%			45
19	0	0%	0	0%	0	0%	41	100%	0	0%	C	0%	0	0%	0	0%			41
20	0	0%	0	0%	0	0%	70	100%	0	0%	0	0%	0	0%	0	0%			70
21	C	0%	C	0%	0	0%	64	100%	0	0%	0	0%	0	0%	0	0%			64
22	0	0%	0	0%	0	0%	13	100%	0	0%	0	0%	0	0%	0	0%			13
23	C	0%	0	0%	0	0%	34	100%	0	0%	0	0%	0	0%	C	0%			34
24	C	0%	0	0%	2	4%	53	96%	0	C%	C	0%	0	0%	0	0%			55
25	0	0%	0	0%	0	C%	30	100%	0	0%	0	0%	0	0%	C	0%			30
26	C	0%	C	0%	1	1%	66	99%	0	0%	0	0%	0	0%	0	0%			67
27	0	0%	1	3%	4	12%	29	85%	0	0%	C	0%	0	0%	0	0%			34
28	C	0%	0	0%	2	25%	6	75%	0	0%	0	0%	0	0%	0	0%			8
29	0	0%	C	0%	5	15%	29	85%	0	C%	0	0%	0	0%	0	0%			34
30	C	0%	2	8%	0	0%	22	92%	0	0%	C	0%	0	C%	0	0%			24
31	C	0%	C	0%	0	0%	15	100%	0	C%	0	0%	0	0%	C	0%			15
32	8	31%	0	0%	0	C%	18	69%	0	C%	C	0%	0	0%	0	0%			26
33	2	67%	0	0%	0	0%	1	33%	0	C%	0	0%	0	0%	C	0%			3
COLUMN TOTALS:	10		3		14		783		0		34		146		82		461	45	1072
PERCENTAGE:																			
ALL CARS:	1%		0%		1%		50%		0%		2%		9%		5%		29%	3%	
EXCEPT HOLD & UNEXP:	1%		0%		1%		73%		0%		3%		14%		8%				

SUMMARY: JANUARY 14,15 & 17 AND FEBRUARY 17, 20, 22 & 23, 1971
PERFORMANCE TABLE: LOCAL EMPTY CARS VERSUS ACTUAL YARD TIME

ACTUAL YARD TIME	CARS ADVANCED DUE TO: EARLY ARR EMP	%	YARD MOVE EMP	%	LATE DEP EMP	%	CARS ON SCHEDULE DUE TO: NORMAL EMP	%	YARD MOVE EMP	%	LATE DEP EMP	%	CARS DELAYED DUE TO: LATE ARR EMP	%	LATE HUMP EMP	%	OB BUILDUP EMP	OTHER EMP	TOTAL
1	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	26	100%	0	0%			26
2	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%			0
3	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	5	100%	0	0%			5
4	0	0%	0	0%	0	0%	0	0%	0	0%	4	57%	3	43%	0	0%			7
5	0	0%	0	0%	0	0%	0	0%	0	0%	2	10%	18	90%	0	0%			20
6	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	25	100%	0	0%			25
7	0	0%	0	0%	0	0%	0	0%	0	0%	5	83%	1	17%	0	0%			6
8	0	0%	0	0%	0	0%	3	38%	0	0%	0	0%	0	0%	5	63%			8
9	0	0%	0	0%	0	0%	5	33%	0	0%	0	0%	0	0%	10	67%			15
10	0	0%	0	0%	0	0%	27	87%	0	0%	0	0%	0	0%	4	13%			31
11	0	0%	0	0%	0	0%	27	84%	0	0%	0	0%	0	0%	5	16%			32
12	0	0%	0	0%	0	0%	17	81%	0	0%	0	0%	0	0%	4	19%			21
13	0	0%	0	0%	0	0%	6	15%	0	0%	0	0%	0	0%	33	85%			39
14	0	0%	0	0%	0	0%	10	53%	0	0%	0	0%	0	0%	9	47%			19
15	0	0%	0	0%	0	0%	87	92%	0	0%	0	0%	0	0%	8	8%			95
16	0	0%	0	0%	0	0%	20	43%	0	0%	0	0%	0	0%	26	57%			46
17	0	0%	0	0%	0	0%	24	75%	0	0%	0	0%	0	0%	8	25%			32
18	0	0%	0	0%	0	0%	49	98%	0	0%	0	0%	0	0%	1	2%			50
19	0	0%	0	0%	0	0%	23	100%	0	0%	0	0%	0	0%	0	0%			23
20	0	0%	0	0%	0	0%	36	100%	0	0%	0	0%	0	0%	0	0%			36
21	0	0%	0	0%	0	0%	33	100%	0	0%	0	0%	0	0%	0	0%			33
22	0	0%	0	0%	[illegible]	3%	34	97%	0	0%	0	0%	0	0%	0	0%			35
23	0	0%	0	0%	0	0%	23	100%	0	0%	0	0%	0	0%	0	0%			23
24	0	0%	0	0%	7	19%	29	81%	0	0%	0	0%	0	0%	0	0%			36
25	0	0%	0	0%	3	10%	28	90%	0	0%	0	0%	0	0%	0	0%			31
26	0	0%	0	0%	4	9%	39	91%	0	0%	0	0%	0	0%	0	0%			43
27	0	0%	0	0%	0	0%	27	100%	0	0%	0	0%	0	0%	0	0%			27
28	0	0%	0	0%	0	0%	12	100%	0	0%	0	0%	0	0%	0	0%			12
29	0	0%	0	0%	0	0%	9	100%	0	0%	0	0%	0	0%	0	0%			9
30	0	0%	0	0%	0	0%	15	100%	0	0%	0	0%	0	0%	0	0%			15
31	0	0%	0	0%	0	0%	6	100%	0	0%	0	0%	0	0%	0	0%			6
32	0	0%	0	0%	0	0%	8	100%	0	0%	0	0%	0	0%	0	0%			8
33	0	0%	0	0%	0	0%	3	100%	0	0%	0	0%	0	0%	0	0%			3
COLUMN TOTALS:	0		0		15		600		0		11		78		113		592	69	817
PERCENTAGE: ALL CARS:	0%		0%		1%		41%		0%		1%		5%		8%		40%	5%	
EXCEPT HOLD & UNEXP:	0%		0%		2%		73%		0%		1%		10%		14%				