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An Investigation of Truck Size and Weight Limits Technical Supplement Vol. 7

Carrier, Market and Regional Cost and Energy Tradeoffs Part II - Appendix E

Gordon Fay Associates, Inc.
Traffic and Distribution Services, Inc.

October 1982
Final Report

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Abstract

Appendix E is a technical letter report, prepared under contract and incorpor-ed into Technical Supplement Volume 7, addressing only one aspect of the "Western ubles" issue - the improvement in service quality and reduced freight rates legedly attributable to the use of twin 27 foot trailer combinations in markets ere they are permitted. This appendix contains a comprehensive description of e use of Western Doubles in carrier operations, as well as the nature of the neral commodity LTL markets and rate data pertinent to the overall Truck Size Weight study. The contract's primary objective was to obtain factual infor-ion from within the physical distribution industry to balance the theory ant in the research community. Specifically the contract areas included: 1) ch corridors were actually utilizing multiple trailers combinations; 2) how why they were utilized in corridor operations; 3) what kinds of markets efit from their use; 4) what is the character and magnitude of these benefits; 5) what is the apparent effect on competitive services and rates.

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PREFACE

Appendix E of Technical Supplement Volume 7, a technical letter report prepared under contract to the Transportation Systems Center during the nine month period ending December 1979, addresses only one aspect of the "Western Doubles" issue - the improvement in service quality and reduced freight rates allegedly attributable to the use of twin 27 foot trailer combinations in markets where they are permitted. This appendix contains a comprehensive description of the use of Western Doubles in carrier operations, as well as the nature of the general commodity LTL markets and a quantity of rate data pertinent to the overall Truck Size and Weight Study (TS&W). This material should be read and referenced only in the context of the rest of the TS&W study, although it is a resource suitable for any study of the Western Doubles Issue.

The primary objective of the contract was to obtain factual information from within the physical distribution industry to balance the theories extant in the research community. Specifically, the contract areas included: 1) what corridors were actually utilizing multiple trailer combinations; 2) how and why they were utilized in carrier operations; 3) what kinds of markets benefit from their use; 4) what is the character and magnitude of these benefits; 5) what is the apparent effect on competitive services. The contract was designed to exploit the experience, data resources, perspective, and insights of practioners in physical distribution and traffic management.

Because the TS&W study had to be completed without an extensive formal survey, the success of this contract was dependent upon the ability of the contractor to draw from internal data files, tariff libraries and other internal reference materials on available transportation services, as well as his ability to elicit information from sources such as carriers and rate bureaus. The team of Gordon Fay Associates, Inc. and Traffic and Distribution Services, Inc. was very communicative and enlightening during many working meetings and broadened the perspective of the TSC study team in addition to preparing a letter report containing factual information data pertinent to the TS&W study.

The format of this report conforms to the original contract statement of work which specified ten tasks, including tasks for presentations at meetings and reporting results. The first nine tasks, Part One of this appendix, focus on the rate and service impacts of Western Doubles use in western corridors. The tenth task was to be a series of studies of potential impacts on selected eastern corridors, based on the data and the rate relationships developed in the earlier tasks. As the contract study progressed, however, it became apparent that "conventional wisdom" concerning the productivity benefits of the Western Doubles was not reflected by the pricing structure for transport services in regions and markets where they were permitted. Therefore, Task 10, Part 2 of this appendix, was scaled down considerably in fav of a more thorough treatment of existing Western Doubles operations, the characteristics of the markets served, and additional rate and revenue research to verify earlier findings.

It is not clear whether the failure of the rate structure in the western region to reflect productivity improvements of Western Doubles is attributable to: a) non-uniformity of size and weight limits and mixed fleets, or b) other increases in costs which mask the Western Doubles productivity improvements, or c) to insufficient market competition. In using the material from this contract and all other sources, the TS&W study has maintained a consistent premise of adequate competition in all markets to assure essentially 100 percent pass-through to the freight rates of all changes in cost due to productivity improvements. Therefore, productivity improvements identified by this contract were translated into rate reductions attributable to Western Doubles in the remainder of the TS&W study. For further discussion on this point, see Section 2 of Technical Supplement Volume 7, Part I.

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EXECUTIVE SUMMARY

Many points of "conventional wisdom" were explored to determine whether a positive correlation existed between the use of Western Doubles and improved efficiency, better service, lower rates or increased carrier profitability. Except for an improvement in the area of service, no substantial positive correlation was found linking the use of Western Doubles with any of the favorable results attributed to their use. However, the conclusion should not be drawn that this type of configuaration is without merit. To the contrary, individual carriers pointed to specific applications that indicated strong positive benefits. However, in total, there was not a strong enough correlation to indicate that Western Doubles would have a predictably measurable impact on rates. One conclusion to be drawn from the lack of impact on rates is that the universal use of the Western Doubles configuration, considered alone, would not have a significant impact on the inter or intra modal division of traffic.

Some of the findings of this research indicated:

- The use of Western Doubles continues to be concentrated in the three Pacific Coast states with usage as a percentage of total tractor-trailer combinations dropping off sharply as one moves eastward.
    - 33% usage in California, Oregon and Washington
    - 10% usage in Arizona, Nevada, Utah, and Wyoming
    - 2% usage in remaining states where allowed
- General commodity common carriers can most readily realize the operating efficiencies of the units, but many types of carrier can benefit from using Western Doubles in specific applications.
- Predominately truckload shippers and carriers do not use and would probably not benefit from the use of Western Doubles.
- Some specific rate items have been designed to capitalize on the inherent cubic capacity advantage of Western Doubles. However, there has not been any general rate level published by any major tariff bureau or by any major carrier to offer the specific advantages of Western Doubles to the general public.
- Service is one area in which positive results were observed from the operation of Western Doubles. These combinations exhibited about a 36% transit time service improvement over conventional tractor semi-trailer combinations.

APPENDIX E1

WESTERN DOUBLES CORRIDOR AND RATE STUDY: A RATE ANALYSIS

DOT-TSC-1690

FINAL REPORT OF
TASKS 1-9

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I. INTRODUCTION

Western Doubles Corridor and Rate Study

The technological application of trucking in the United State and elsewhere has evolved in much the same fashion as the railroads. Regional differences have occurred in weight and size limitations, trailer configurations, operating philosop and market orientations. These differences are caused not necessarily by economic forethought, but because of perceive differences in roads, weather, terrain, market, political, and other conditions. The use of two 27-foot trailers operating in tandem (Western Doubles) has developed and grown from a far west regional base because the mid-west and western states have had less restrictions on size, weight, and trailer configurations than the eastern states.

The primary purpose of this study is to determine the impac of the universal use of Western Doubles on rates, service, and competition. If Western Doubles were allowed to operat throughout the East would their presence seriously impact existing rate, service and market relationships? In order to gain an insight into this potential impact, it was first necessary to determine how, by whom, and where Western Doul are currently being used and then transfer the measure of that impact on rates and services to the remainder of the country. The degree of existing intramodal impact on rate and service, once measured, can then be translated into an estimate of the impact on competitive modes of transportat

The study is based on the premise that carrier operating efficiencies and cost reductions resulting from use of Western Doubles will pass through, at least in part, to shippers in the form of improved services and reduced freight rates. If, by studying the existing use of Western Doubles, these two factors could be quantified, the impact on competitive modes, i.e., "diversion of markets to the highway modes" could be estimated.

Conventional wisdom indicates that if through the use of a Western Doubles configuration a single tractor and driver can haul approximately 20% more cubic capacity, there will be cost savings in fuel and manpower. An indepth cost/benefit analysis on the use of Western Doubles by various types of motor carriers is not within the scope of this study. However, other points of conventional wisdom indicate that Western Doubles have benefits beyond mere labor and fuel savings and these benefits would constitute additional factors in determining the impact of Western Doubles on rates, service, and competition. In approaching this study, the following ten points of conventional wisdom were reviewed:

1. Lower costs would be reflected in lower rates.
2. Less dock handling would result in lower platform costs.
3. Less dock handling would result in improved service.
4. Western Doubles are more efficient. Therefore, carriers utilizing them would be more profitable.
5. Western Doubles are more efficient. Therefore, where permitted, there will be a very high percentage of utilization.

6. Western Doubles have inherent advantages. Therefore carriers using them would widely publish rates to promote the particular benefits.

7. Individual Western Doubles trailers offer the possibility of marketing smaller truckload units. Therefore, carriers using them would publish lower truckload minimum weights to take advantage of this improved competitive tool.

8. Carriers should publish dual minimum weights for on and two trailers wherever Western Doubles are permi

9. Western Doubles would be used for light density commodities because of the larger available cube.

10. LTL freight is generally less dense than truckload freight. Therefore, carriers utilization of Weste Doubles will vary according to the percent of LTL freight handled.

If all, or a significant portion of the above points could b quantified in favor of Western Doubles, an analysis could then be made to determine the degree of impact on competitiv modes of transportation.

Summary of Findings

Research into the geographic dispersion of Western Doubles indicated the greatest penetration of Western Doubles has been in the Pacific States of California, Oregon, and Washington. Table II-1, "Percent of Western Doubles Classi At Truck Weight Stations", shows that 32.69% of all tractor trailers classified at the truck weight stations for these three states were Western Doubles. Arizona, Nevada, Utah, Wyoming all had over 10% Western Doubles. After these stat usage drops drastically averaging 1.32% for East North Cent states, 3.73% for West North Central states, and 1.84% for the West South Central states. Conventional wisdom would that if Western Doubles are more efficient than single tra

there will be widespread use of them wherever permitted. Except for the Pacific States, the data does not support the concept. It would be valuable to know the cause of this anomaly, but at this point the study team can only offer tentative suggestions to explain the wide divergence of Western Doubles use in states where they are permitted. The most logical explanation appears to be the relative isolation of the three Pacific States from a regulatory and truck operation viewpoint.

The transcontinental common carriers haul little intra-Pacific freight. Most of this freight is being handled by carriers that do not operate significant distances east of the Rockies. Carriers operating between the Pacific and Central and Eastern states operate in a dual configuration environment because some states permit Western Doubles, some restrict the use of Western Doubles, and others do not permit them at all. Therefore, these carriers have a mixed fleet of singles and doubles. Carriers operating solely within the Pacific States have 100% of their operations in states permitting Western Doubles and therefore do not have the problems associated with a mixed fleet. This line of reasoning suggests that given an unhindered choice, certain carriers will choose Western Doubles for all or a high percentage of their operations. Therefore, one could anticipate Western Doubles having a utilization rate somewhere between 10 and 33% in the East if they were allowed. The fact that California has the highest degree of industrialization of the

Pacific states and also the highest utilization rate of Western Doubles further supports the possibility of a high utilization rate of Western Doubles in the East.

Many types of carriers can benefit from using Western Doubles. However, the greatest utilization will come from carriers that can realize the operating efficiencies inherent in Western Doubles rather than just the cube capacity. General commodity common carriers can realize operating efficiencies more easily than other carriers because of their large number of terminals and break bulk operations. Western Doubles provide the flexibility of loading direct to more terminals thus bypassing break bulk handling. Truckload freight usually bypasses dock handling Thus, the only advantage offered by Western Doubles on truc load freight is higher cube.

Before discussing the factors that could argue against a hi utilization rate in the East, another key finding should b placed in proper perspective. The primary use of Western Doubles is by general commodity common carriers of LTL freight. These carriers use Western Doubles primarily bec of the operating efficiencies and not solely to haul light density freight. The average density of LTL freight is 12.5 lbs./cu. ft. which is on the borderline of "cubing ou and "weighing out" on each load. Depending upon a carrie: mix of customers, the general commodity carriers will hav between 40 and 50% of trailers dispatched full to reasona

capacity (considering good stowage practices to minimize damage) without being overloaded under today's weight laws. Thus, although density is a consideration, the primary benefit to the common carrier is operating efficiency.

Factors that could argue against a high penetration of Western Doubles in the East are:

- A higher percentage of TL traffic in the East, and
- A greater volume of freight in the East.

As indicated in the report, some of the inherent advantages of the Western Doubles (namely reduction in dock handling) are not a factor on TL shipments. In fact, shippers prefer to load and carriers prefer to haul one trailer rather than two. Therefore, it is possible that relative to the Pacific States a higher percentage of Eastern tonnage would still move on long single trailers because of the higher percent of TL tonnage.

Likewise, the higher volume of freight moving throughout the East could reduce the Western Doubles utilization rate. A terminal generating 20,000 lbs. of freight a day for another terminal can more readily use Western Doubles to advantage than a terminal generating 40,000 lbs. per day. It is not clear at this point if carriers can fully realize the benefits of Western Doubles if 200,000 lbs. per day moves between two terminals. Would dock handling be reduced? Would line-haul savings offset increased capital, hostling, and fleet mix costs?

The research results relative to the ten points of conventional wisdom previously outlined are reviewed below:

1. Lower costs would be reflected in lower rates. The study team could not find any substantial data to support this point. Rates for areas of the country allowing Western Doubles were usually higher than in areas not permitting Western Doubles.

2. Less dock handling would result in lower platform costs. A comparison of platform costs with Western Doubles usage both on a per unit basis and in terms of total dollars indicated no meaningful correlation. The data used for this analysis may have been too aggregate to reveal any cost advantage. An analysis using more disaggregate data might expose cost reductions in handling costs of LTL carriers attributable to Western Doubles. Such an analysis was beyond the resources allotted for this project.

3. Less dock handling would result in improved service. A review of transit time service in Western Doubles areas compared with transit times in predominately singles areas indicated a transit time advantage in the Western Doubles area. The calculated service improvement in terms of miles per day was approximately 36%.

4. Western Doubles are more efficient. Therefore, carriers utilizing them would be more profitable. An analysis of carrier operating ratios (the percentage of operating costs to operating revenues) shows no positive correlation between profitability and the use of Western Doubles. In fact, the most profitable large motor carrier in the United States operates no Western Doubles.

5. Western Doubles are more efficient. Therefore, where permitted, high percentage of utilization should be found Except for the Pacific States, there is no major use of Western Doubles. Western Doubles apparently have advantages for only certain types of operations and freight. Although if restrictions are eliminated in the East, this situation could change.

6. Western Doubles have inherent advantages. Therefore, carriers using them would widely publish rates to promote the particular benefits. Extensive rate research did not uncover any rates specifically published to take advantage of the benefits of Western Doubles. In fact, only a tip from a motor carrier traffic manager enabled the research team to find a few such rates. Generally, there had been no widespread publication of rates designed to pass the advantages of Western Doubles efficiences on to shippers.

7. Individual Western Doubles trailers offer the possibility of marketing smaller truckload units. Therefore, carriers using them will publish lower truckload minimum weights to take advantage of this tool. No lower truckload minimum weights were found in tariffs applying in the Western Doubles operating areas.

8. Carriers should publish dual minimum weights for one and two trailers wherever Western Doubles are permitted. As with reduced minimum weights in the preceeding point, no sets of dual minimum weights were found in tariffs that apply to the Western Doubles operating area.

9. Western Doubles would be used for light density commodities because of the larger available cube. In a few specific applications, some specialized carriers used Western Doubles based almost exclusively on the density of the product being transported. However, generally, carriers did not believe that product density considered alone would determine the use of Western Doubles.

10. Less-than-truckload (LTL) freight is generally less dense than truckload freight. Therefore, carrier utilization of Western Doubles will vary according to the percentage of LTL freight handled. An analysis of the 34 largest carriers in the country indicated a positive correlation between the percent of Western Doubles utilization and the percent of LTL freight handled.

The lack of a strong correlation in a majority of the above points of conventional wisdom leads to the conclusion that no measurable correlation exists between the use of Western Doubles and the level of freight rates. Taken alone, the use or non use of Western Doubles would only have a measurable impact on service and no impact would be felt on rates or the division of market shares.

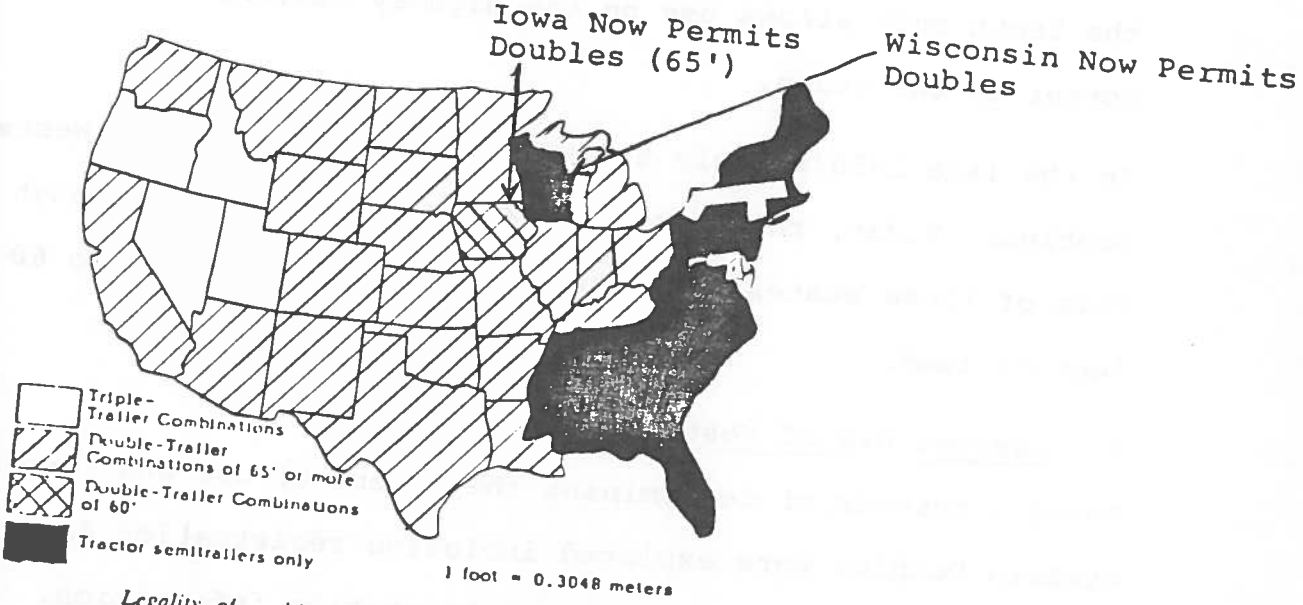
II. THE WESTERN DOUBLES MARKET (TASK 1 - CORRIDOR MAPPING)

A. Regulatory Environment

Historically, each state has had the power to set its own regulations concerning vehicle size and weight characteristics. Since the maturing of both the motor carrier industry and the highway systems after the 1940's, the setting of truck size and weight standards has been in each state a balancing act between technical considerations and the relative political strengths of truck, rail and general highway user lobbying groups. In 1975, Congress enacted legislation permitting a uniform Interstate Highway standard of 80,000 pounds maximum gross weight. Each state was permitted to keep its own standards and many today continue to have variances from this Federal standard. Overall vehicle length and configuration standards govern the ability to operate trailers in tandem, such as the "Western Doubles" configurat: For the purposes of this report "Western Doubles" refers to 27 or 28-foot trailers which are capable of being operated i tandem hauled by a single tractor. The name derives from th predominate and historical use of this configuration in the Far Western states.

The states where Western Doubles are currently permitted is shown in Exhibit II-1. As the map clearly shows, the Easter States do not permit tandem trailer operation except on certain specific toll roads. It is important to notice tha Georgia, Mississippi, New Jersey and New York do not

Exhibit II-1



Legality of multiple trailer combinations. This figure depicts the practical use of multiple trailer combinations when combining length laws with laws governing the number of units permissible with a combination. For example, the laws of Arkansas, Colorado, Kansas, Missouri, Ohio, and Texas do not prohibit triples; however, the length limits in those states do not make the use of triples practical. Likewise, doubles combinations would be legal in Georgia, Mississippi, New Jersey, and New York, but the 55' length limits make the combination impractical.

Source: NCHRP #198 State Laws and Regulations on Truck Size and Weight

directly ban Western Doubles. Rather, they restrict the total combination length to 55 or 60 feet which tends to make a combination of two trailers impractical. As a result of recent court cases, Western Doubles are now permitted in Wisconsin and Iowa. Fifteen states permit triples but practical use is excluded in nine because of length restrictions while the tenth only allows use on one highway cutting across a corner of the state.

In the late 1950's, only ten western states permitted Western Doubles. Today, thirty-six states permit doubles although five of these states restrict the combination length to 60 feet or less.

B. Present Use of Western Doubles

Several methods of determining the extent of use and flow of Western Doubles were explored including registration data, carrier interviews and truck weight station information. The only source which had both the precise information desire and a nationwide consistency of measurement is data gathered by the States at truck weight stations. From this informati which is published on a national basis by the Federal Highwa Administration (FHWA), the percent of Western Doubles of the total tractor-trailer traffic can be calculated for each Sta The truck weight data collected by the State highway agencie is part of their highway planning and research programs. Th

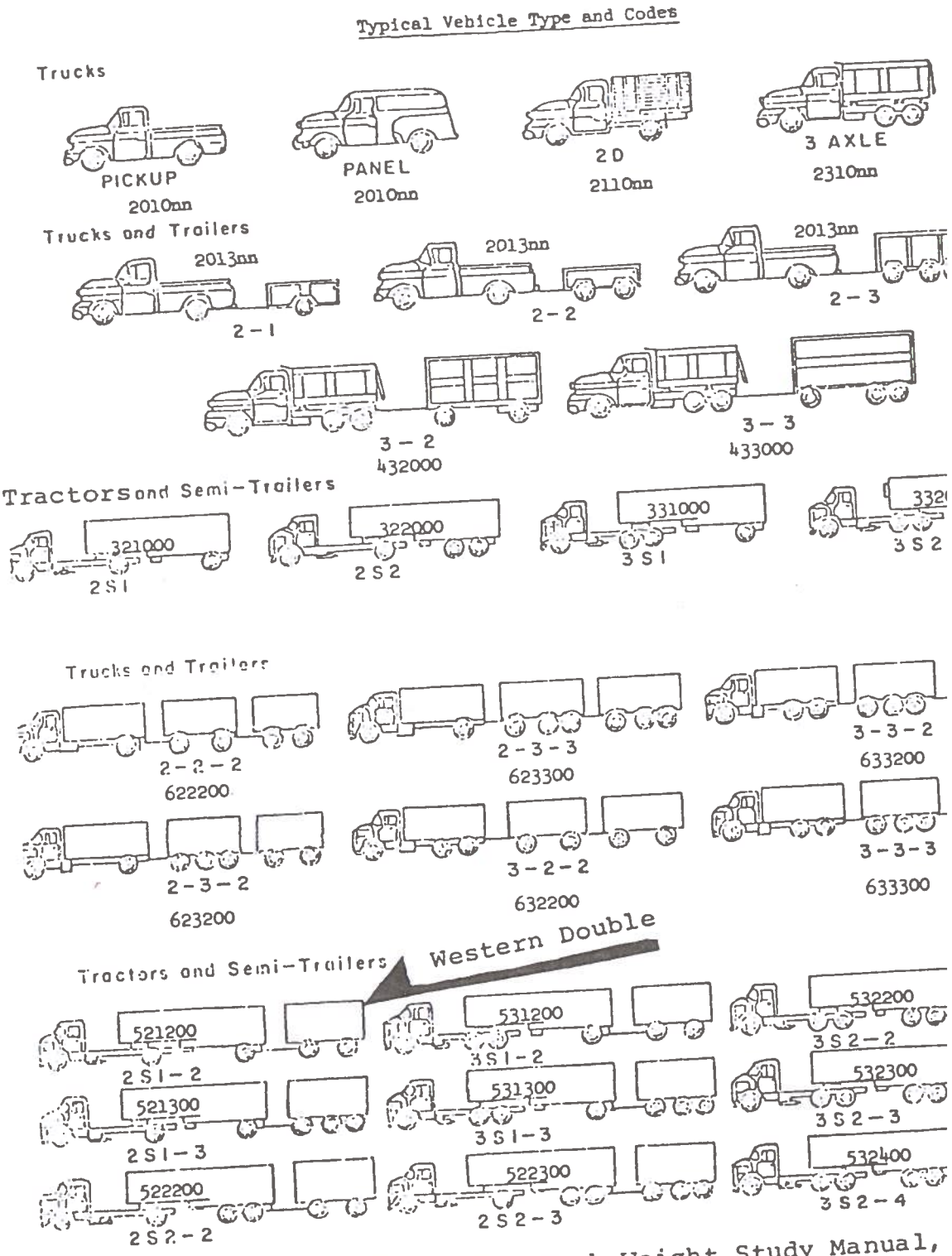
programs have been carried out over the last four decades in all states in order to assemble basic truck weight and configuration data and trends. This data has been used for highway design and planning purposes for many years. Although the stations selected are predominately on rural inter-city Interstate highways and the sampling for weighing of trucks has not always been scientifically designed, the large sample and generally good route coverage lends credibility to the data as descriptive of intercity truck movements.

In addition to weighing vehicles, the states also count and classify all vehicles passing the truck weight stations during their operation which is generally on a summer weekday. The standard classification of vehicle types used by all states is shown in Exhibit II-2. The Western Doubles configuration is classified therein as item 521200. The states select a sample of trucks and weigh them either with portable loadometers or at permanent scales. The data is not collected for prosecuting for overweight vehicles, however, drivers in certain instances will avoid the stations. The states report this data in a standardized format to FHWA, which summarizes the data for national planning purposes.

Data for 1977 was first evaluated to determine the percentage of Western Doubles usage by state. This information is displayed in Table II-1, "Percent of Western Doubles Classified at Truck Weight Stations". During 1977, some 23,482 Western

Exhibit II-2

STANDARD CLASSIFICATION OF VEHICLES FOR TRUCK WEIGHT STATION IDENTIFICATION



Source: FHWA Guide For Truck Weight Study Manual, pg. 41C

TABLE II-1

PERCENT OF WESTERN DOUBLES CLASSIFIED AT TRUCK WEIGHT STATIONS
1977

State	% Doubles	State	% Doubles
Connecticut	0	Iowa	1.29
Maine	0	Kansas	7.11
Massachusetts	0	Minnesota	.38
New Hampshire	0	Missouri	4.43
Rhode Island	0	Nebraska	7.72
Vermont	0	North Dakota	5.94
New England	0*	South Dakota	.59
		West North Central	3.73*
New Jersey	0		
New York	.17	Arkansas	0
Pennsylvania	0	Louisiana	0
Middle Atlantic	.03*	Oklahoma	3.47
		Texas	3.08
Delaware	0	West South Central	1.84*
Maryland	0		
Virginia	0	Arizona	15.14
West Virginia	0	Colorado	6.61
South Atlantic North	0*	Idaho	7.82
		Montana	2.01
Florida	0	Nevada	14.32
Georgia	0	New Mexico	8.49
North Carolina	0	Utah	10.47
South Carolina	0	Wyoming	11.62
South Atlantic South	0*	Mountain	9.93*
Illinois	2.70	California	38.46
Indiana	1.60	Oregon	17.20
Michigan	1.16	Washington	18.15
Ohio	1.32	Pacific	32.69*
Wisconsin	0		
East North Central	1.32*		
Alabama	0		
Kentucky	.51	U.S. Total**	3.48*
Mississippi	0		
Tennessee	0		
East South Central	.35*		

* Weighted Averages
** Includes small amount of data from D.C., Alaska, Hawaii, and Puerto Rico

Source: FHWA Classification Summary Table 1977 for U.S.

Doubles were classified at 219 intercity Interstate truck weight stations. The percents shown in Table II-1 are Western Doubles trailer combinations as related to all other tractor-trailer combinations. No straight trucks, or trucks with trailer are included in the total population.

A much clearer picture of Western Doubles use emerges when the data from Table II-1 is displayed on a map of the United States as shown in Exhibit II-3. The predominant Far West regional use stands out. Also of note is the relatively low incidence of Western Doubles in the South Central States of Texas, Oklahoma and Arkansas and in the industrialized belt of Illinois, Indiana, Ohio and Michigan.

The patterns displayed are most likely the results of many interacting forces, predominately market forces and state laws. However, the picture clearly establishes that Western Doubles are a Western phenomenon. In the Pacific Coast Stat doubles are greater than 17 percent of all tractor-trailer combinations on the intercity highway system. The density of Western Doubles use falls off sharply east of the Pacifi Coast States despite a relatively long history of such trailer combinations being legal.*

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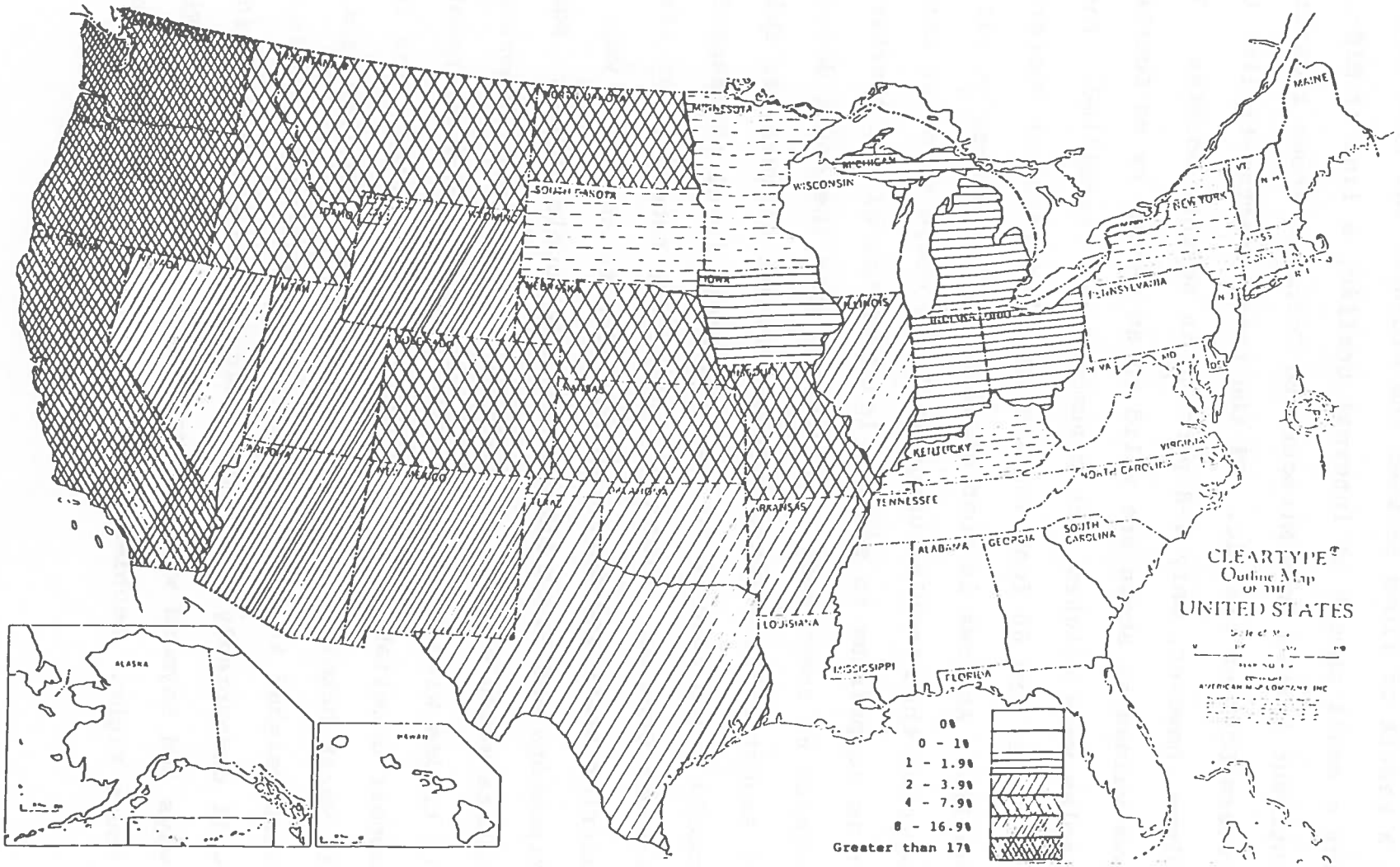
*The Western Doubles data for Montana is lower than the percent derived from the data related to vehicles actually stopped and weighed in Montana. As a result, Montana probably looks more like Idaho and North Dakota than what the raw data suggests.

EXHIBIT II-3. PERCENT WESTERN DOUBLES OF ALL TRACTOR TRAILER COMBINATIONS ON INTERCITY-INTERSTATE HIGHWAYS



Source: FHWA - 1977 Truck Weight Classification Data

As a result of flows between the Mid-West and West Coast, plus a small amount of internal traffic, a line of Mid-Continent States from Missouri to Colorado shows significant Western Doubles traffic. Of the total tractor-trailer traffic volume, however, only 4-8 percent is Western Doubles. The Iowa values as shown are valid to an extent as no Doubles samples were weighed, but a number were classified. These, of course, are 60 foot doubles and therefore not Western Doubles. As Iowa is considered a barrier state, it was expected that Doubles usage would be close to or at zero, but it is surprising to see the level of use of the shorter doubles as shown here. Of course, with the court decision of August 1979, Western Doubles now are allowed, so this should bring Iowa up to its neighbors' level of usage for Western Doubles. Wisconsin until very recently was also a barrier state and this fact explains to an extent why Minnesota and South Dakota have low Doubles usage. North Dakota would also be expected to mirror its neighbors as it trades with them. The results shown for South Dakota appear unreliable as there are too few samples. For instanc in South Dakota 16 Western Doubles were classified but 19 were weighed in the truck weighing operation. Use in Wiscor will undoubtedly increase particularly by Consolidated Freig ways and Raymond who were prime participants in the Wisconsi Court Fight. Doubles were allowed in Wisconsin for intra-s

transportation prior to the recent decision, but the courts considered the Wisconsin regulations against Doubles as interference with interstate commerce and unequal treatment of two similar classes of traffic.

Trading partners play a role in the application opportunities of Western Doubles. Interviews with carriers clearly revealed the dilemma faced by those operating between those states where Western Doubles are permitted and the Eastern and Southern restricted states. Carriers operating across and within these areas predominately use forty-five foot trailers rather than trying to mix fleets. The statistics for these Doubles border states clearly have a lower incidence of Western Doubles operation than do trading partner states to the West, where they are permitted.

The use of Western Doubles in the Pacific Region has matured over the last three decades. The percent usage in that region of 33 percent of the total tractor-trailer traffic might be indicative of the upper level that unrestricted use of doubles could achieve across the United States in intercity use in the long run.

The use of Western Doubles in California significantly drives the weighted average percent for the Pacific Region. California with 38 percent Western Doubles of the total tractor-trailer traffic, is more than twice as large in percentage

terms than the next highest state, Washington (18%). In raw observations, 10,056 Western Doubles were counted at seven stations in California (average of 1,437 per station). In Washington, a total of 1,351 Western Doubles were counted at four stations (average of 338 per station). As these stations were all on intercity interstates, it is clear that the Western Doubles predominate primarily in California Further, relating the California raw observations to the sum for states reveals that 43 percent of the Western Doubles observations occurred in California.

Intra-state use of Western Doubles only occurs in any significant volume within California. The measure of this volume can be assumed by comparing California use with its neighboring trading partner states, all of which display approximate half the percentage use and one-half to twenty percent of t absolute count observed in California. Based on this data, it is reasonable to conclude that a significant percent, perhaps one-half, of California's Western Doubles operate exclusively within the State. Interviews with trucking officials in California confirm this observation. A large portion of the intra-state doubles volume occurs in the Los Angeles-San Francisco corridor.

The use of Western Doubles began in a region characterized by low density development and relatively great distances between markets. These characteristics still persist to a

great extent today. As industry grew on the Pacific Coast, particularly in the late 1940's and 1950's, the Western Doubles became an integral part of Western highway transport. It is important to recognize that terminal costs were not the major reason for adoption of Doubles in the West. Rather, the line haul economics between distant points in the West were the driving force behind adoption and use of Western Doubles. Today, there is no discernible difference between platform costs for carriers using Western Doubles versus those of carriers in the West or elsewhere who use 40 to 45 foot single trailers. But, the average haul for the top 16 Western based carriers (headquarters west of Mississippi) is 967 miles, while the same figure for eastern based carriers is 562 miles.

In order to respond to Task 1 Corridor Mapping requirements to identify the "markets currently using Western Doubles" and to provide mapping of "the major interstate routes" where they are currently used, further extensive research and use of the FHWA truck weight data would be required. Information gathered during interviews with selected major carriers is not definitive enough to identify the overall patterns of usage by route by state or by market. Only the FHWA data is comprehensive enough to respond to this subtask. Also the truck weight data collected by the state highway and transportation agencies and pulled together by

FHWA has other data elements which can be used to characterize the markets by corridor or route. The type of carrier, ICC regulated, private carrier, and non-regulated is identified in this truck weight data along with commodity codes and weight of vehicles by axle and total. It is suggested that all interstate rural stations (219 in 1977) be taken and where detailed truck weight data is available from 1977 or 1978, this data be analyzed for percent western doubles, type of carrier, commodity types, percent empties and other specific data. These data items then should be attached to an interstate route map for display. This will be a most effective measure of the required items.

C. Historical Use of Western Doubles

Nationally, the use of Western Doubles has appeared to decline as a percent of all tractor-trailer combinations from 3.7 percent in 1969 to 3.6 percent in 1973 and to 3.5 percent in 1977, as shown in Table II-2. Although the relative use these trailer combinations appears to be declining, the absolute usage appears to be growing. In 1969, 16,434 Western Doubles were classified at all intercity Interstate truck weight stations. The observations for 1973 and 1977 were 19,285 and 23,482 respectively. In Indiana, Ohio, Texas, Missouri, Nebraska, Washington and California, the absolute number of Western Doubles classified at intercity Interstate

truck weight stations increased from 1969 to 1977. Only in Illinois and Oregon of the selected states reviewed was there a decline in absolute observations according to the classifications obtained. It must be recognized that over the time period reviewed there has been a cutback in many highway data gathering efforts for budgetary reasons. As a result, it is possible that the drop in Illinois and Oregon results from a reduction in such efforts.

TABLE II-2

PERCENT WESTERN DOUBLES OF ALL TRACTOR-TRAILER COMBINATIONS AT SELECTED INTERCITY INTERSTATE TRUCK-WEIGHT STATIONS 1969-1977

lected ates	1969 Doubles Classified	1969 % Doubles	1973 Doubles Classified	1973 % Doubles	1977 Doubles Classified	1977 % Doubles
linois	760	3.69	394	4.53	442	2.70
diana	238	3.76	553	3.02	520	1.60
io	1,017	.98	1,067	1.78	1,237	1.32
xas	336	2.43	314	3.11	974	3.08
ssouri	720	6.99	652	6.87	1,080	4.43
braska	49	1.18	296	9.33	349	7.72
egon	503	30.16	573	24.26	476	17.20
shington	869	18.11	535	17.98	1,351	18.15
lifornia	8,190	43.80	7,091	41.28	10,056	38.46
ional	16,434	3.7	19,285	3.6	23,482	3.5

Of particular note in Table II-2 is the continuing drop in California of Western Doubles as percent of total tractor-trailer traffic. Oregon has dropped almost in half in percentage terms over the eight year period. Washington percentage has remained constant over the same period. The

reasons for this overall declining market for Western Doubles in the Pacific Region is not yet clear. However, it does suggest a mature level of market penetration. As California industry grows, greater proportions of traffic undoubtedly are shifting to truckload volumes and to private carriage, both of which suggest the use of 45 foot trailers rather than Western Doubles.

D. Primary Western Double Traffic Corridors

The most widespread use of Western Doubles is by general commodity common carriers. These carriers are the primary movers of LTL shipments. Since the majority of general commodity common carrier freight moves between major metropolitan areas and since these areas are connected by the interstate highway system, where permitted, Western Doubles will follow the major freight flow lanes over the interstate highway system. FHWA vehicle data supports this conclusion. A dozen major Eastern carriers were interviewed to determine their opinion as to where Western Doubles would be primarily used in the East. The consensus was that, depending upon the carriers route structure, Western Doubles would be as ubiquitous as in the West but that the major concentration would naturally follow the major routes

To precisely forecast the largest trade route concentration of Western Doubles in the East would require, at a minimum, extensive origin and destination commodity flow data by mode. Analysis of this type is not within the scope of this study. Therefore, as a setting for the evaluation of rate information and other data, eight major inter and intra-regional freight traffic corridors have been identified. Within each corridor there are a number of major freight market combinations. The corridors used for analysis in this study are shown in Exhibit II-4. The eight corridors are:

1. Boston - Miami
2. St. Paul - Boston
3. St. Paul - Miami
4. Chicago - Dallas
5. St. Paul - Seattle
6. Chicago - Los Angeles
7. San Francisco - Dallas
8. Seattle - Los Angeles

Each of these corridors can be defined in terms such as the general characteristics of the markets represented, the types of carriers predominant in the marketplace, the intensity of the competition, and the specific technical requirements regarding size, weight and configuration of motor carrier equipment permitted to operate on the interstate system in the corridor. (For more detailed information on limitations of equipment under the state laws, the reader should see Hansen, R.J., Associates cited in the Annotated Bibliography.)

EXHIBIT II-4. EIGHT CORRIDORS FOR ANALYSIS

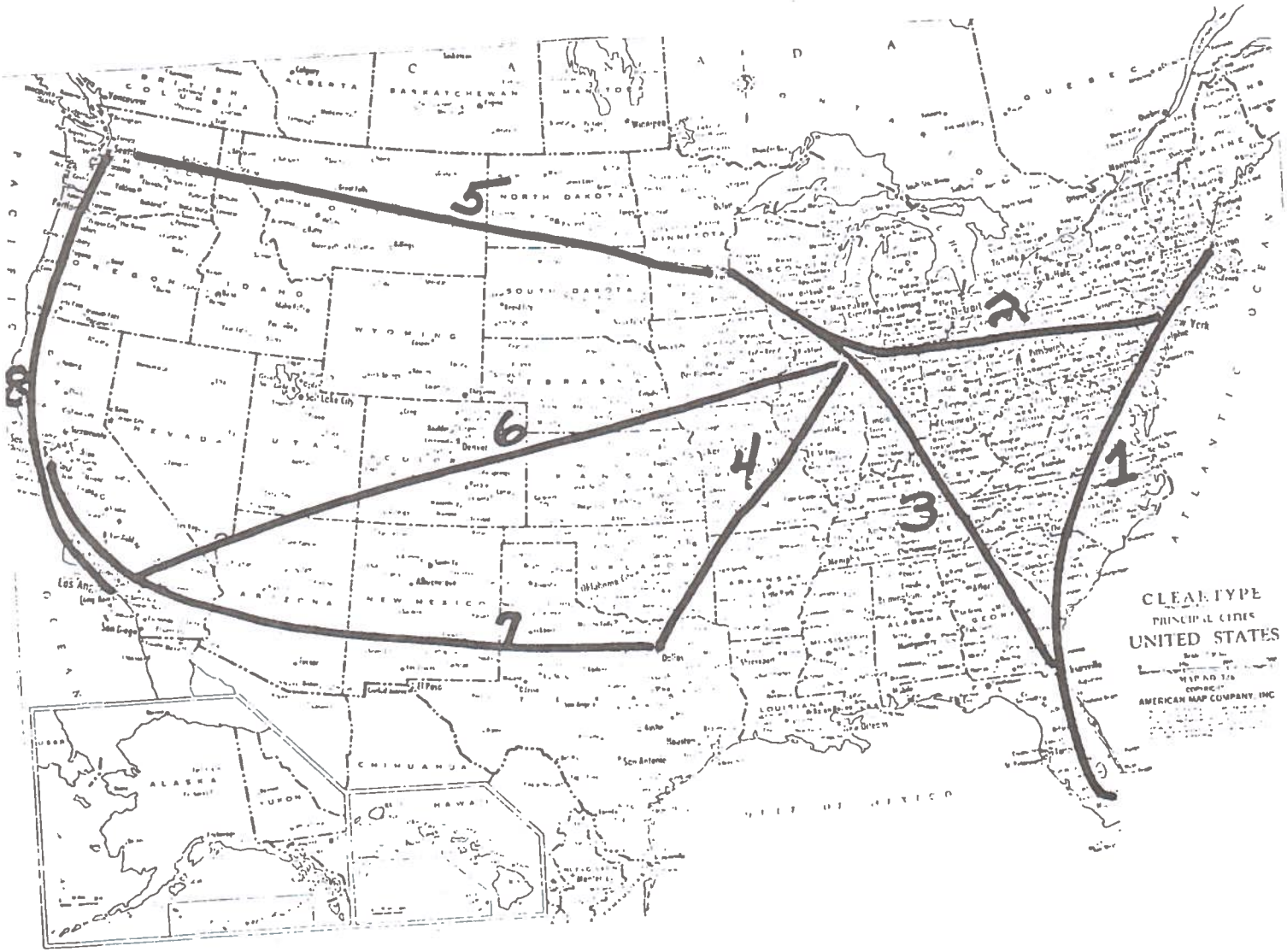


Table II-3 provides the geographic characteristics of each corridor and the applicable size/weight regulations. Generally, the limiting factor for traffic moving through the corridor is the most restrictive "barrier" state.

The eight corridors selected were chosen on the basis of:

- Interviews with carriers
- Ubiquitous coverage of a major portion of the United States freight markets
- Ability to compare Western Doubles and Singles operating opportunities
- Availability of freight data from the FACTS data base and other sources
- Analysis of FHWA vehicle data.

TABLE II-3

CORRIDOR DESCRIPTIONS

1. Corridor: Boston - Miami

Type: Singles Corridor

States Through Which Corridor Extends	Vehicles Allowed Max. Gross Weight In Pounds	Length In Fee
1. Massachusetts **	80,000	60
2. Connecticut	73,000	55
3. New York **	80,000	55
4. New Jersey	80,000	55
5. Pennsylvania	73,280	55
6. Delaware	80,000	65
7. Maryland	73,280	65
8. District of Columbia *	73,280	55
9. Virginia	76,000	55
10. North Carolina	79,800	55
11. South Carolina	73,280	55
12. Georgia	73,280	55
13. Florida	80,000	55

* Not a state
** Turnpikes allow Doubles

The northern half of the corridor proceeds through the heart c the largest, densest concentration of population, industry and commercial activity in the nation. The southern half traverse through several industrially growing markets and connects man major centers of activity. There are numerous sub-markets throughout this corridor with some of the heaviest segments being New York to Philadelphia and New York to Boston.

The terrain almost without exception is characterized by fla coastal plain. Only in small sections of Massachusetts, Mar Virginia, North Carolina, and South Carolina are some rollin

hills encountered. I-95 which is the major route through the corridor has high design standards with low gradients and virtually no sharp curves from Boston to Miami. Only on bridges, tunnels and approaches thereto are gradients steep.

Important local alternatives exist on I-95 for through truck traffic from Boston to Miami. One of these utilizes I-95 from Boston to New Haven via Providence instead of the slightly shorter route of I-90, I-86, I-84, and I-91 to New Haven via Hartford. The grades via Providence are less than along the inland route and depending upon loaded weight versus horsepower, may be shorter in time and fuel. Another local alternative which is used to bypass Washington, D.C. is U.S. 301 from Baltimore to Richmond, while traffic congestion could be a problem in Washington, 301 seldom is at or near capacity.

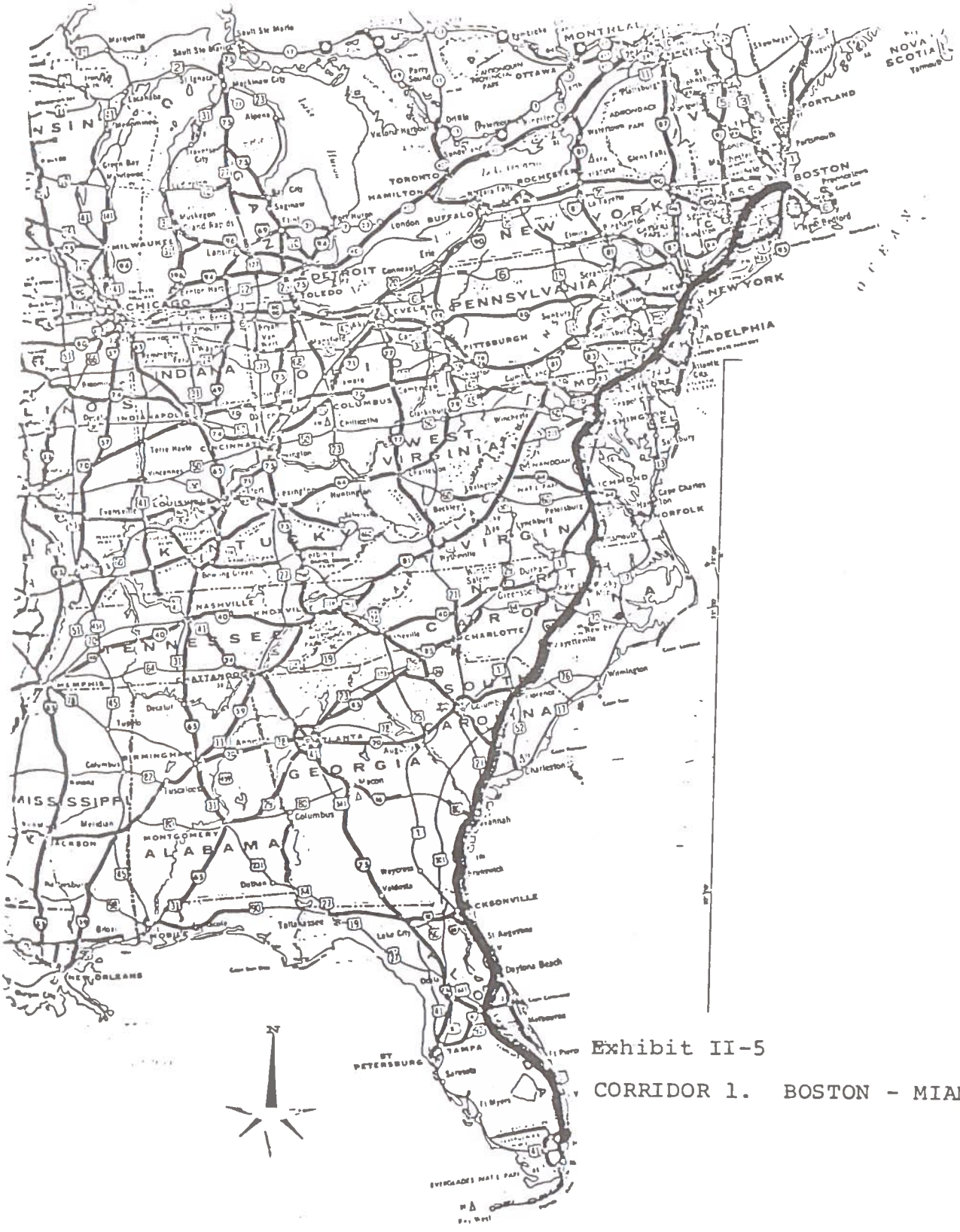


Exhibit II-5

CORRIDOR 1. BOSTON - MIAMI

2. Corridor: St. Paul - Boston

Type: Singles or Doubles Corridor

States Through Which Corridor Extends	Vehicles Allowed Max. Gross Weight In Pounds	Length In Feet
1. Minnesota	80,000	65
2. Wisconsin	80,000	55
3. Illinois	73,280	60
4. Indiana	73,280	65
5. Ohio	80,000	65
6. Pennsylvania	73,280	55
7. New York *	80,000	55
8. Massachusetts *	80,000	60

* Turnpikes allow Doubles: Both Western Doubles and Turnpike Doubles

This corridor proceeds through the second most intensively developed area in the nation. Outside of Megalopolis (Boston-Richmond) there is no greater density of residential, industrial, and commercial activities anywhere else in the United States. Some of the principal lanes in this corridor are Chicago - New York, and Chicago - Boston. The western portion of this corridor extends across the flat mid-western plains while at Buffalo rolling hills are encountered and carry all the way to Eastern Massachusetts.

An important alternative route available to singles trailer rigs proceeds via the Pennsylvania Turnpike and I-95 to New York and Boston. Another variant routing for singles follows I-80 from Cleveland all the way to New York. A more extensive discussion of Doubles on Toll Roads is at the end of this section, and it also covers the alternatives for operating Doubles in this corridor.

St. Paul to Boston	via I-94 and I-90	1,335 m
St. Paul to Boston	via I-94, I-90, I-76, and I-95	1,365 m
St. Paul to New York	via I-94, I-90, and I-87	1,270 m
St. Paul to New York	via I-94, I-90, and I-80	1,115 m
St. Paul to New York	via I-94, I-90, I-76, (Pennsylvania Turnpike) and I-95	1,165 mi

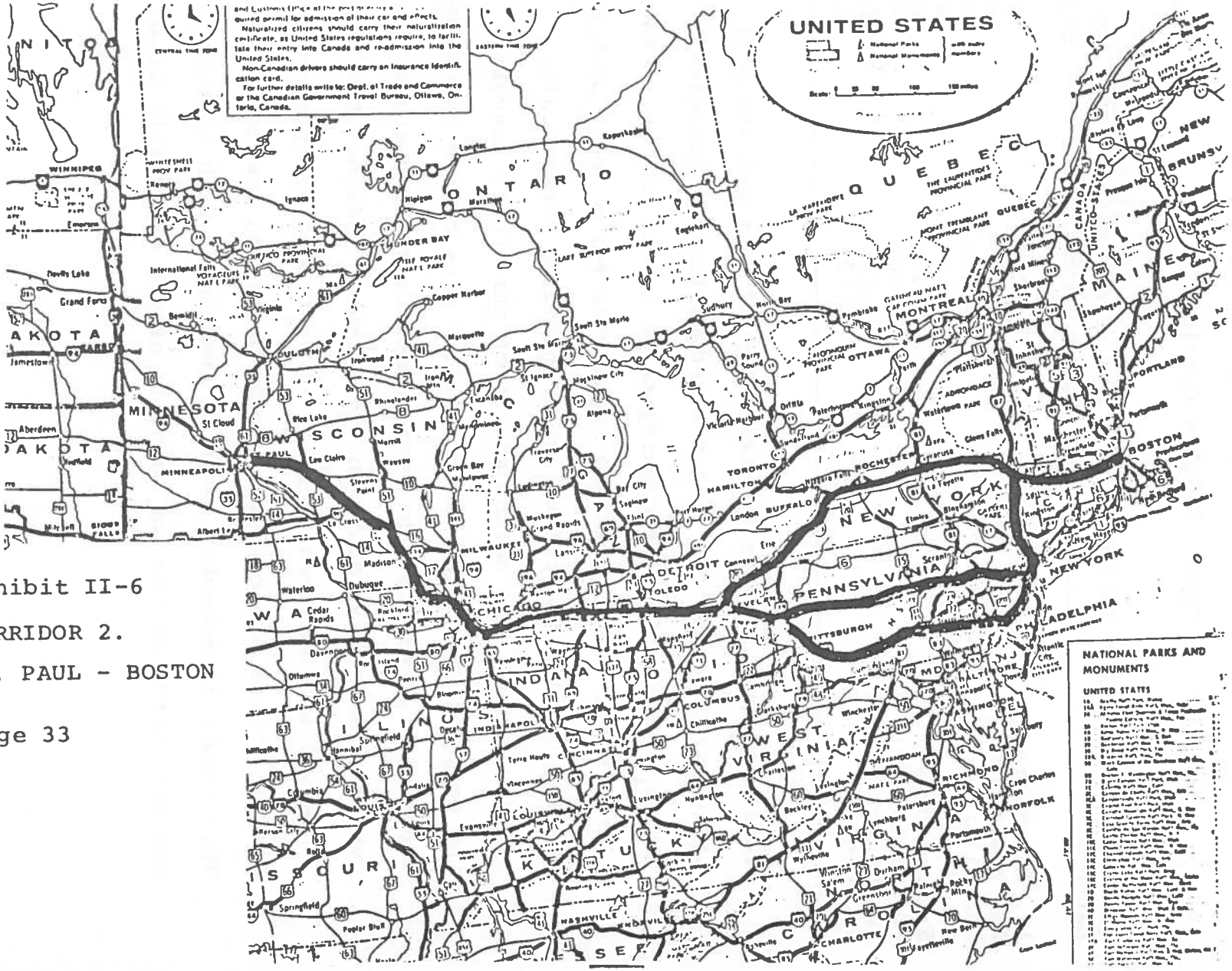


Exhibit II-6

CORRIDOR 2.

ST. PAUL - BOSTON

Page 33

3. Corridor: St. Paul - Miami

Type: Singles Corridor

States Through Which Corridor Extends	Vehicles Allowed: Max. Gross Weight In Pounds	Vehicles Allowed: Length In Feet
1. Minnesota	80,000	65
2. Wisconsin	80,000	55
3. Illinois	73,280	60
4. Indiana	73,280	65
5. Kentucky	80,000	65
6. Tennessee	72,000	55
7. Georgia	73,280	55
8. Florida	80,000	55

This corridor connects the heartland of American industry, including Chicago, the nation's second largest activity center, with the fastest growing state in the nation - Florida. Although the route traverses Appalachia for a large part of its length, its end points are anchored in economically healthy areas. The northern part of this route traverses the easy grades of the eastern plains area of the United States. The middle portion of the route encounters heavy grades throughout the Appalachian Mountains in southern Indiana, Kentucky, Tennessee and northern Georgia. In southern Georgia and Florida, there are relatively easy grades on the coastal plain. The climate is somewhat harsh in the winter with frequent snow and ice storms making the mountain grades especially dangerous.

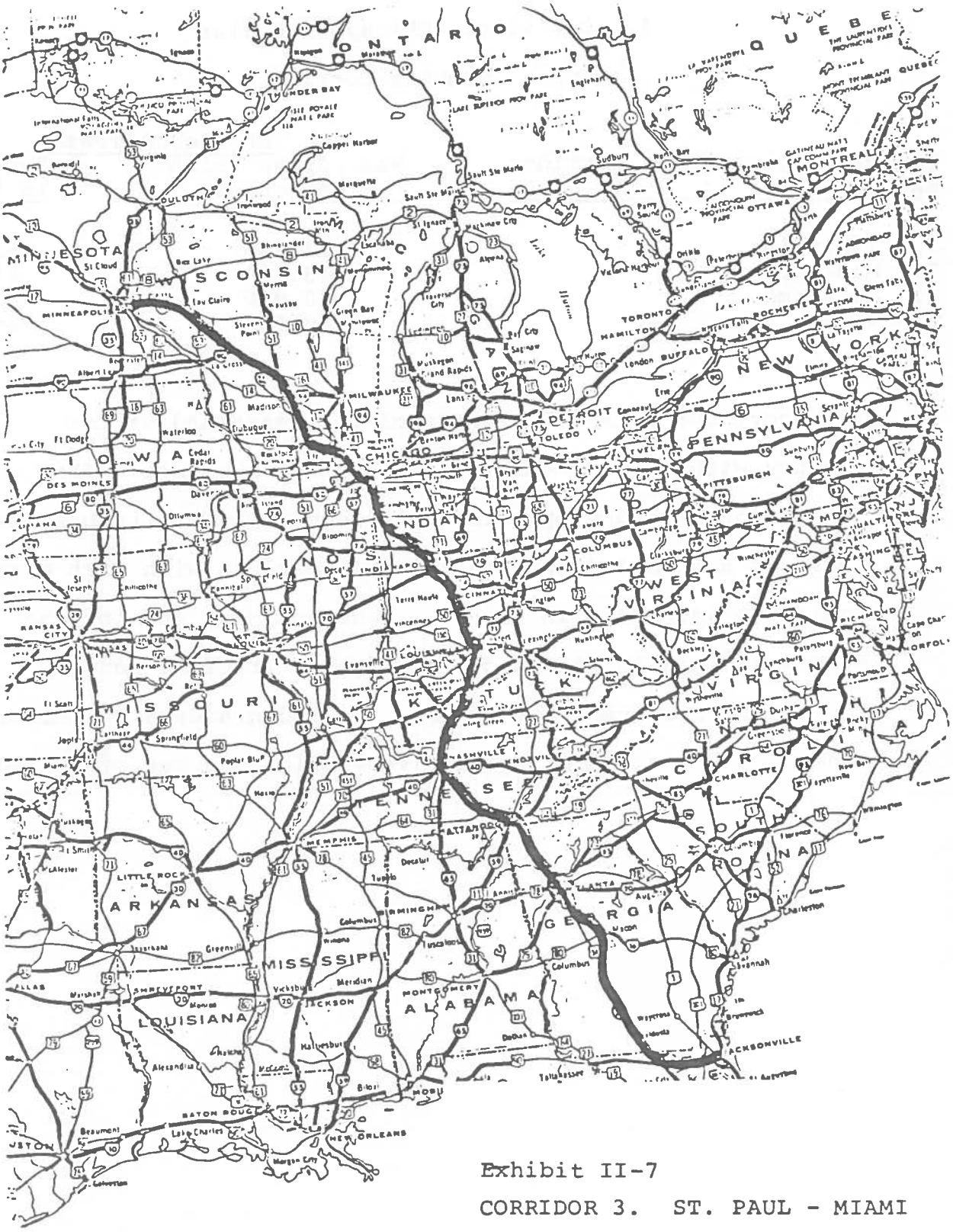


Exhibit II-7

CORRIDOR 3. ST. PAUL - MIAMI

4. Corridor: Chicago - Dallas

Type: Doubles Corridor

States Through Which Corridor Extends	Vehicles Allowed Max. Gross Weight In Pounds	Length In Feet
1. Illinois	73,280	65
2. Missouri	73,280	65
3. Oklahoma	80,000	65
4. Texas	80,000	65

This corridor links the center of the heartland of the country with the economic center of the Southwest. This is a major corridor open its full length to Western Doubles. There is a normal imbalance in this corridor with much more freight originating in the heartland and destined for the Southwest than is returned. Throughout its full length, this route traverses the plains area and grades are a minor element. The climate is relatively mild once out of Illinois.

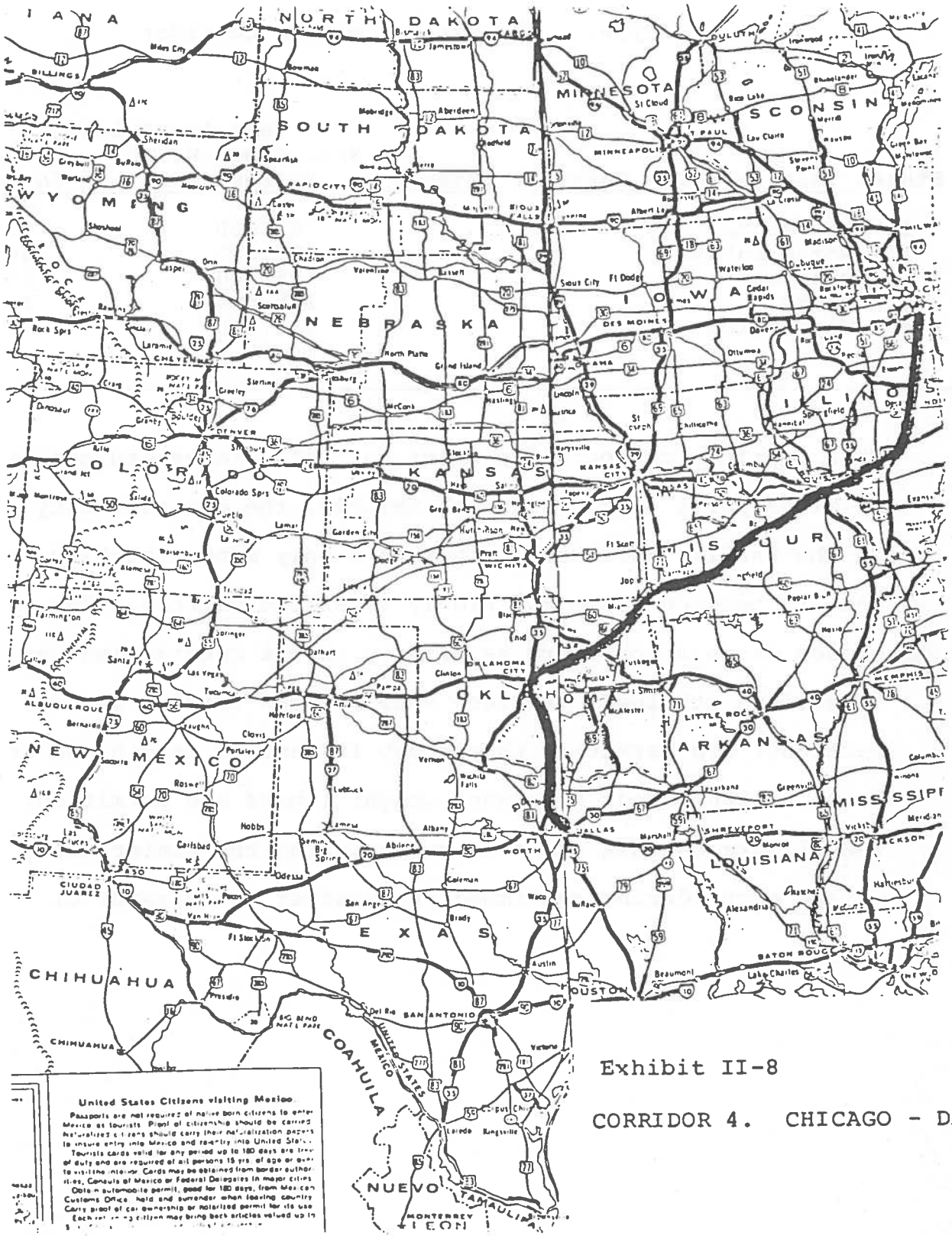


Exhibit II-8

CORRIDOR 4. CHICAGO - DALLAS

5. Corridor: St. Paul - Seattle

Type: Western Doubles Corridor

States Through Which Corridor Extends	Vehicles Allowed Max. Gross Weight In Pounds	Length In Feet
1. Minnesota	80,000	65
2. North Dakota	80,000	65
3. Montana	105,500	85
4. Idaho	105,500	98
5. Washington	105,500	65

This corridor connects the major northern midwestern center of Minneapolis - St. Paul with Seattle, the dominant city in the Pacific Northwest. There are only minor activity centers between these two widely separated centers. The grades on this route are relatively modest considering the elevations attained. Western Doubles (and triples in some sections) are permitted throughout its entire length and at least 80,000 pounds or higher weight limits are permitted. The climate on this route is harsh during the winter and delays occur during and immediately after the passage of storms.

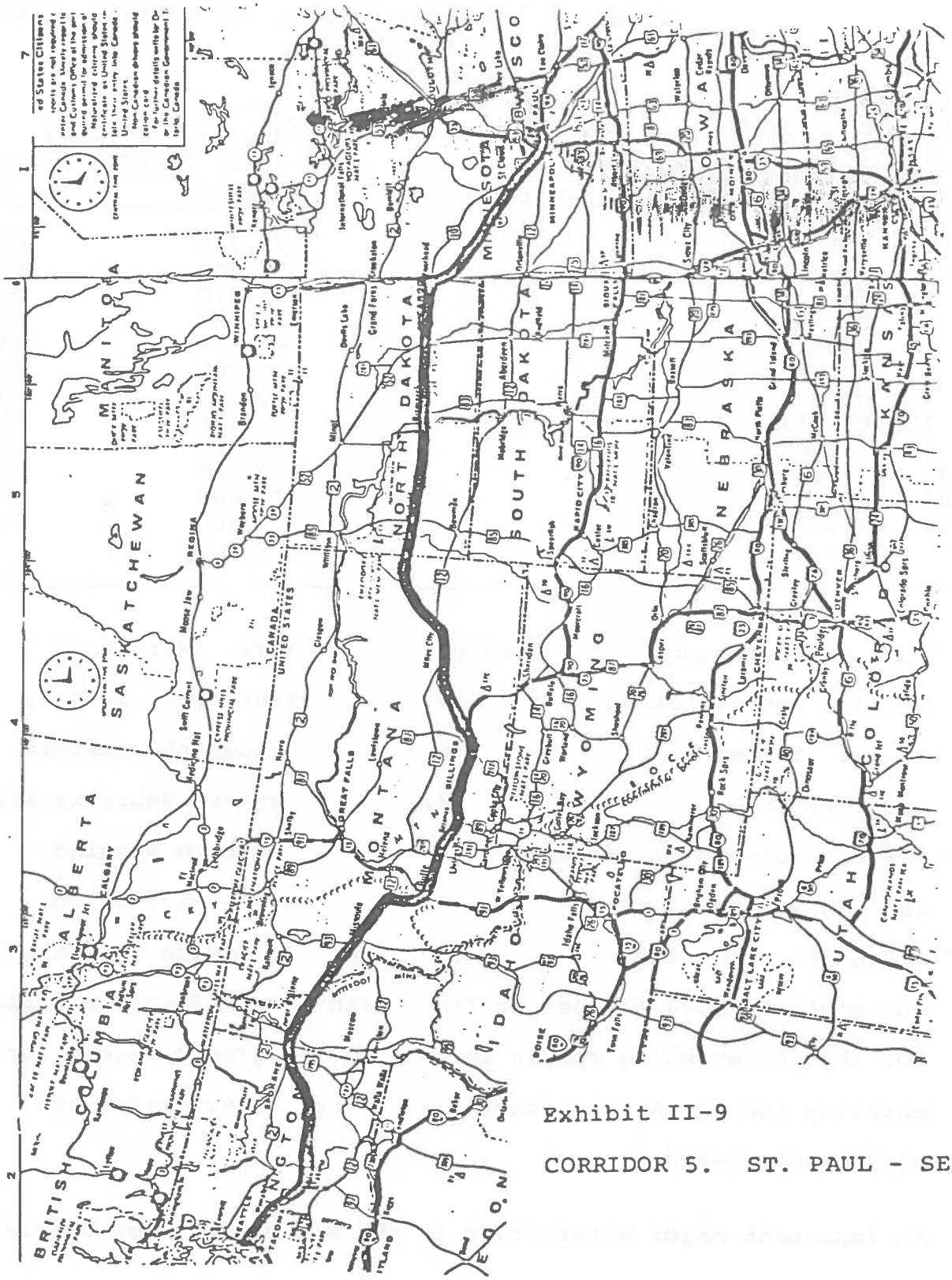


Exhibit II-9

CORRIDOR 5. ST. PAUL - SEATTLE

6. Corridor: Chicago - Los Angeles

Type: Doubles (Except for barrier state of I
Corridor

States Through Which Corridor Extends	Vehicles Allowed Max. Gross Weight In Pounds	Length In Feet
1. Illinois	73,280	60
2. Missouri	73,280	65
3. Iowa	73,280	55
4. Nebraska	80,500	65
5. Wyoming	80,000	85
6. Utah	80,000	65
7. Nevada	80,000	75
8. California	80,000	65
9. Oklahoma	80,000	65
10. Texas	80,000	65
11. New Mexico	80,000	65
12. Arizona	80,000	65

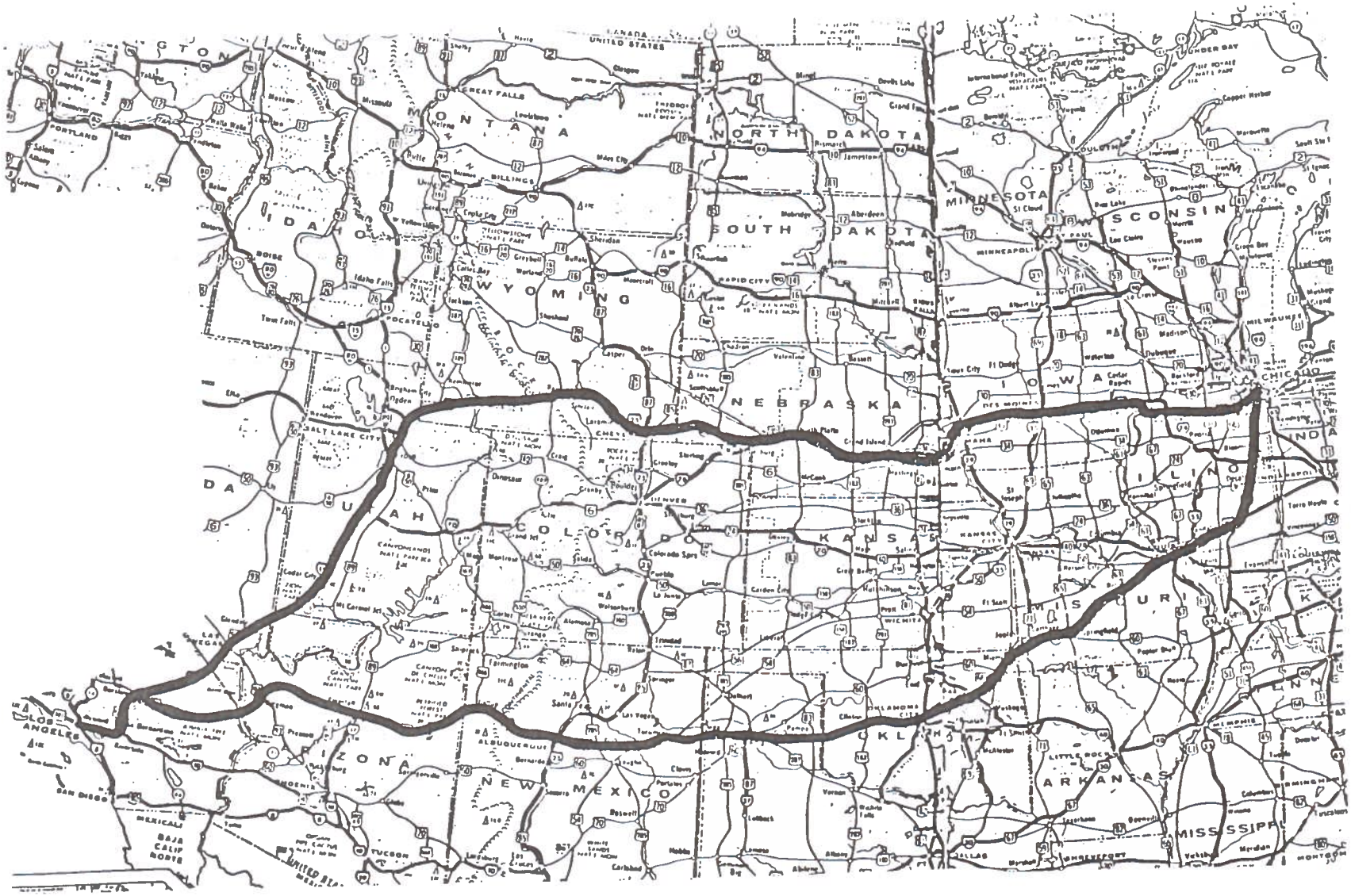
This corridor connects two very large centers. With some smaller centers enroute, this is an important cross country route. The eastern end of the route is through the eastern prairies and not until eastern Wyoming - western Nebraska are any appreciable grades encountered. Then through Wyoming and Utah, steeper grades and higher passes are part of the route for about 600 miles. Through much of Nevada and California the route follows the desert floor with more modest elevations for the passes which result in much easier grades except for entering the Los Angeles basin where some heavy grades are again encountered.

An important major alternative to the Western Doubles barrier

route through Iowa is the southern route through Missouri, Oklahoma, Texas, New Mexico, and Arizona. This route allows Western Doubles for its whole length and the grades are much easier than the northern route. The small mileage differential of 43 miles makes the more southerly route an attractive alternative for Western Doubles operation.

Chicago to Los Angeles via I-80, I-15, I-90	2,119 miles
Chicago to Los Angeles via I-57, I-44, I-40, I-15 and I-10	2,162 miles

EXHIBIT II-10. CORRIDOR 6. CHICAGO - LOS ANGELES



Source: Fay Associates, p. 42.

7. Corridor: San Francisco - Dallas

Type: Doubles Corridor

States Through Which Corridor Extends	Vehicles Allowed Max. Gross Weight In Pounds	Length In Feet
1. California	80,000	65
2. Arizona	80,000	65
3. New Mexico	86,400	65
4. Texas	80,000	65

This corridor links the major centers of the West Coast with a major Southwestern commercial center. There are almost no smaller centers except Phoenix, Tuscon, and El Paso between the end points outside of those in California. This route, although mostly through desert areas, has some grades. The section through West Texas, Southern New Mexico, and Eastern Arizona is rolling terrain. During the winter, the milder weather enjoyed on this route reduces winter storm delays greatly over the more northern routes.

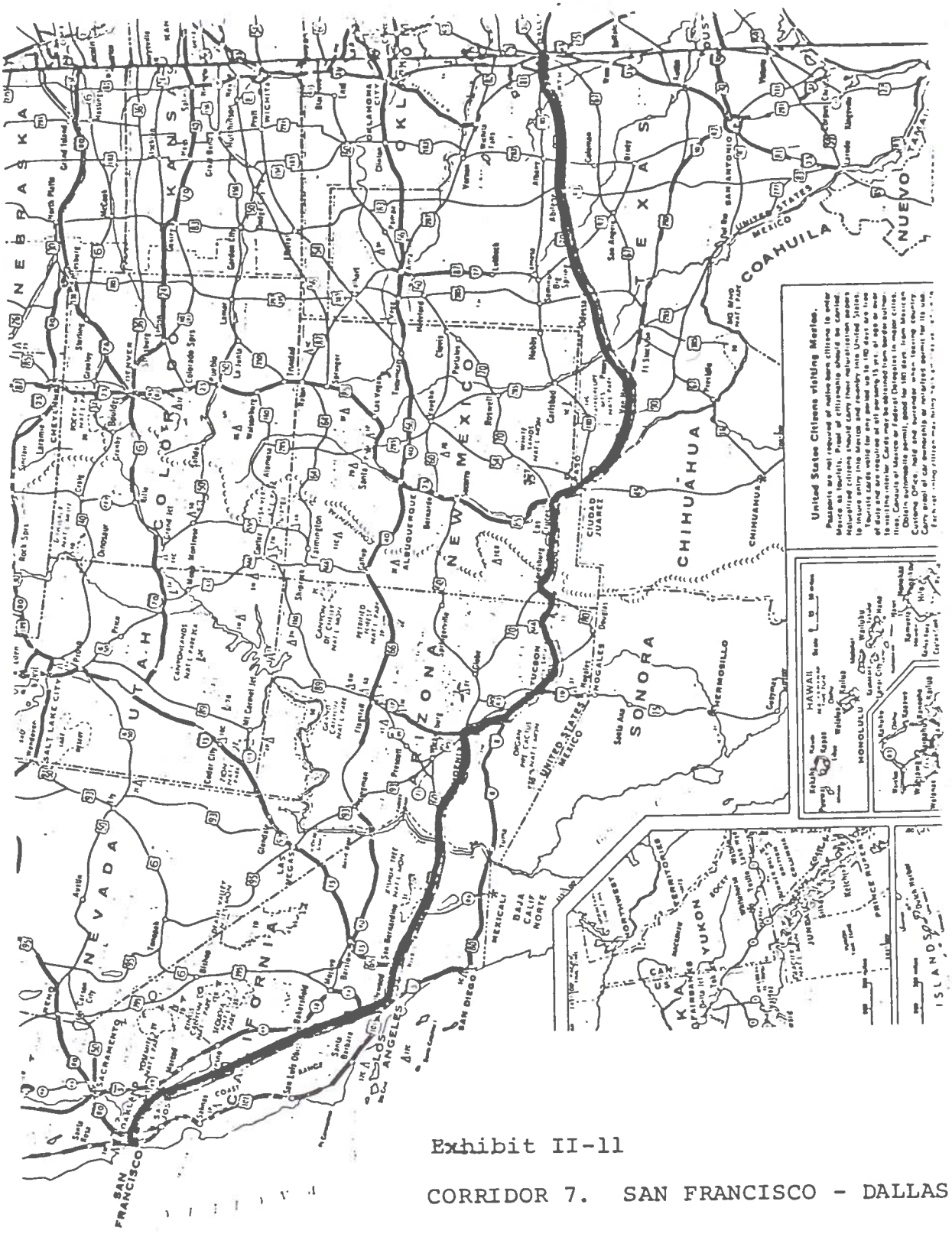


Exhibit II-11

CORRIDOR 7. SAN FRANCISCO - DALLAS

8. Corridor: Seattle - Los Angeles

Type: Doubles Corridor

States Through Which Corridor Extends	Vehicles Allowed Max. Gross Weight In Pounds	Length In Feet
1. Washington	80,000	65
2. Oregon	80,000	75
3. California	80,000	65

This corridor traverses that portion of the West Coast wherein 80% of all residential, industrial and commercial activities in these states are gathered. The principal lanes within this corridor are between Los Angeles and San Francisco, and San Francisco and Portland. Portland to Seattle is a less dense lane in this corridor. The terrain in the Southern third of the corridor between Los Angeles and San Francisco starts with a small range of mountains (Tehachipi) and then becomes desert and flat. To the north of San Francisco, the corridor winds its way through the rolling coastal ranges of the Cascades. Most of this corridor has heavy grades. The Interstate Route minimizes these to the extent feasible, but still the route has many steep grades. The mild climate for the whole length of the route reduces delays due to weather.

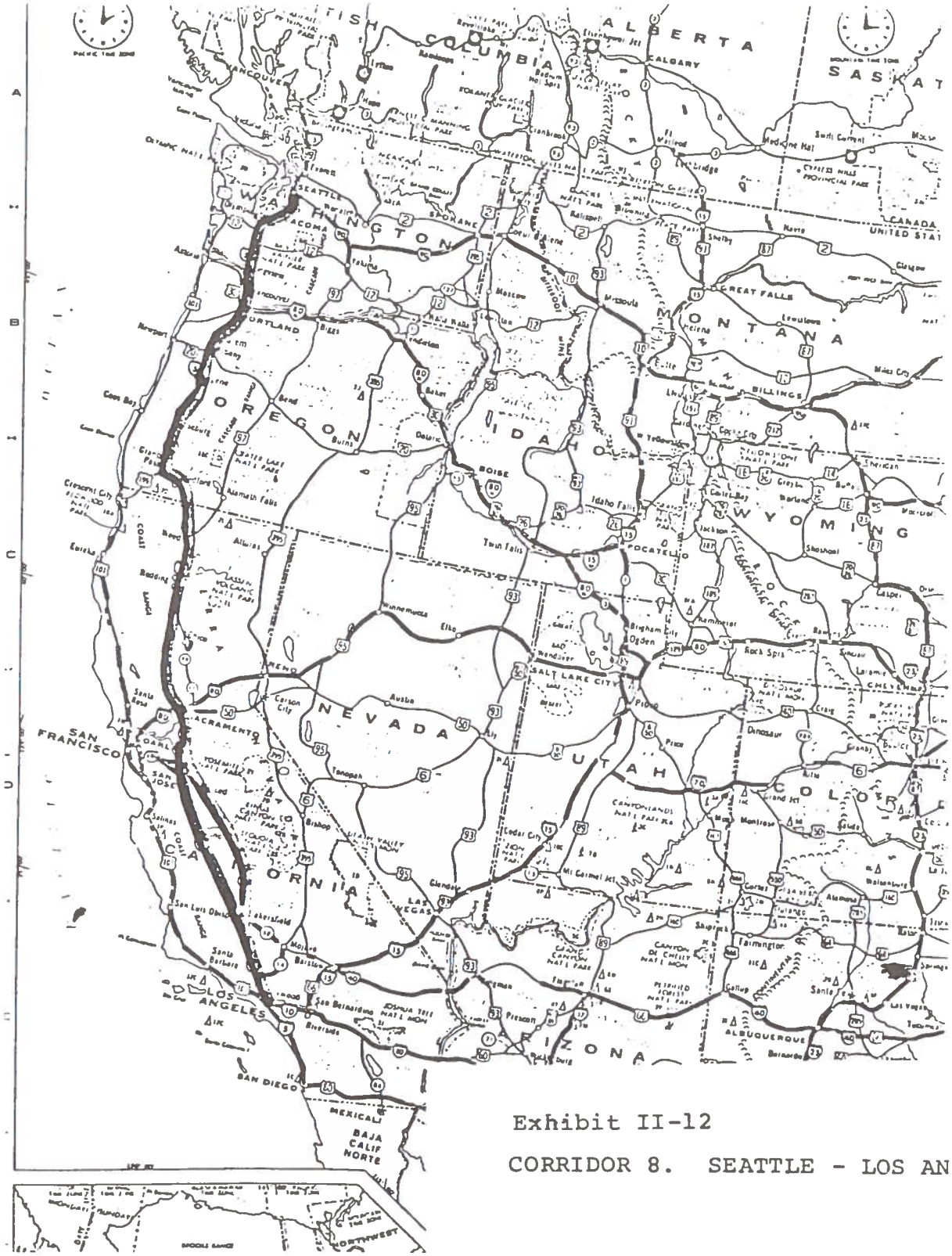


Exhibit II-12

CORRIDOR 8. SEATTLE - LOS ANGELES

E. Use of 40 and 45 Foot Single Trailers and Triple Trailers. (Tasks 4 and 5)

Forty foot trailers are utilized in every state in the union. In 1972, this size trailer accounted for 50% of all trailers manufactured. Since then, production of 40 foot trailers has fallen off appreciably.

In 1976 for instance, manufacture of forty foot trailers was down to 28.2% of total trailer production while trailers over 42 feet climbed from 34.8% to 55.5% of the market.

The forty five foot and longer trailers are growing faster than any other size trailer. This size increased as percent of total trailer production from 31.7% to 37.0% from 1972 to 1976.

The introduction of the cab over engine tractor has had much to do with the ability to increase trailer length over the last two decades while keeping within overall length limits.

Trailers over 45 feet in length are few and far between. Special uses sometimes dictate longer trailers, but because of state laws, these have to be "permitted" to operate. The brewing industry in Texas and Wisconsin has operated especially long single trailers for many years. In Milwaukee, one major brewer uses 47 1/2 foot vans to haul empty cans. Because of loading dock limitations, they are held to this size while another Milwaukee brewery

uses 57 1/2 foot vans. These vans travel 13 miles each way over the public highways, 24 hours per day, seven days per week. They are automatically unloaded in three minutes upon arrival. Longview, Texas, is the site of another brewery which uses 57 1/2 foot vans in the same fashion. Because of pallet size in the industry, trailers have gone from 43 feet to 47 1/2 feet to 53 feet and now to 57 1/2 feet in a few cases.[1]

It is important to recognize that LTL common carriers are not concerned with density or cubage primarily; rather they concentrate on operational efficiencies. Private or contract carriers on the other hand, hauling specific commodities on a continuing basis, can select equipment tailored to the density and other characteristics of the load. Therefore, we see LTL carriers using long singles in the east and Western Doubles in the west. Also, many contract and private carriage trailers in the east and west are 45' except where a carrier can benefit from Western Doubles.

Triple trailers are found in four western states on a regular basis: Idaho, Nevada, Oregon and Utah. Montana just started allowing triples making a total of five states where they are presently permitted. Idaho allows

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Superscripts 1 through 9 reference TSC editorial comments which are listed on p. E1-170.

this combination up to 105 feet in length on designated highways. Utah and Nevada permit them up to the same length on all highways. In Arizona, they are allowed to pass through the upper Northwest corner on I-15, which connects Utah and Nevada. Montana allows them on interstate highways with access to nearby terminals.

California is studying the use of Triples. California Senate Concurrent Resolution No. 39 relative to multiple trailer combinations on state highways introduced on June 25, 1979, would set up a two year test of triples. The test would allow the use of triples up to 98 feet and 98,000 pounds on I-15 and I-10 from Nevada and Arizona into the Riverside area on I-80 and I-5 from Nevada and Oregon into the Sacramento area and I-5 between Northern and Southern California beginning January 2, 1980, for a two year period. The results of such operational studies shall include a report of fuel saved, productivity gained, and highway safety results which shall be made available to the legislature by January, 1982.

During 1976, at ten truck weight stations operating in Nevada, 51 triple trailer combinations were weighed out of a total of 1,966 trucks weighed. The number of triples classified is not known, but based on the data available, approximately 1.5% of the total tractor-

trailer combinations may have been triples. Four of those weighed were empty while 47 were loaded partially or fully. One of the loaded triples weighed in at 122,100 pounds.

A major western carrier with extensive triples operations explained their operations from Los Angeles, California to Twin Falls, Idaho. They move three tractors with two trailers each (Western Doubles) from Los Angeles to Las Vegas. There they split up one of the doubles and make triples on to Twin Falls. On the return from Twin Falls, with canned goods or other cargo, they will trail an empty or partially empty third trailer on the back of two full trailers. Because Twin Falls is a consuming area for the most part, getting full back haul is unlikely. The empty trailer allows them to keep fleet balance while still producing revenue return on the back haul.

F. Western Doubles in the East

Various motor carrier trade groups such as the American Trucking Association, major motor common carriers and others have lobbied for extension of Western Doubles and larger twin trailer operations into the Eastern states. Interviews with both transcontinental and Eastern Seaboard carriers have produced almost universal endorsement of Western Doubles as beneficial to the industry and its customers. Displayed in Exhibit II-13

are typical comments received during interviews with carriers. The bullish nature of comments leaves the impression that the potential efficiencies of the motor carrier industry are being stultified by size and weight restrictions.

Shippers are not quite as bullish, but a number of them have expressed interest in doubles and those comments are displayed in Exhibit II-14.

There is no question that removal of Western Doubles restrictions would result in use of Western Doubles in the East.

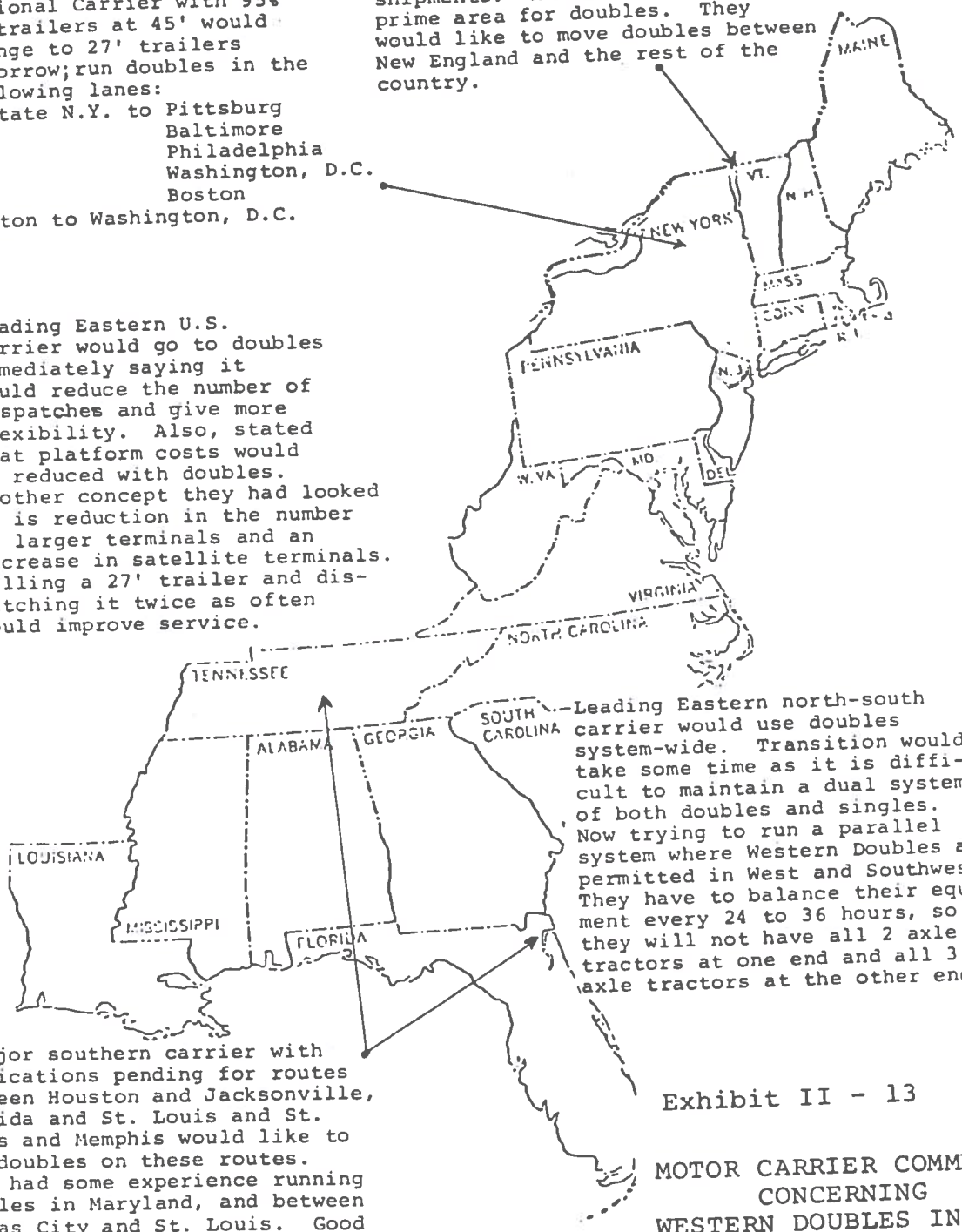
However, the issues are the extent to which this would occur and the level of economic benefits to carriers and the translation of that benefit through the rate structure.

The results of the evaluation of the extent of Western Doubles operations as compared to the whole tractor-trailer spectrum indicated a maturity level of 10-33 percent of the total market on the West Coast. All other states where doubles are allowed indicate 2-10 percent of the market. Further analysis reported in other sections of this study indicates that (1) LTL traffic is the prime candidate for Western Doubles, (2)

Middle Altantic Conference Regional Carrier with 95% of trailers at 45' would change to 27' trailers tomorrow; run doubles in the following lanes:
Upstate N.Y. to Pittsburg
Baltimore
Philadelphia
Washington, D.C.
Boston
Boston to Washington, D.C.

A national carrier would like to use Western Doubles in New England because of density and size of shipments. Makes New England a prime area for doubles. They would like to move doubles between New England and the rest of the country.

Leading Eastern U.S. carrier would go to doubles immediately saying it would reduce the number of dispatches and give more flexibility. Also, stated that platform costs would be reduced with doubles. Another concept they had looked at is reduction in the number of larger terminals and an increase in satellite terminals. Filling a 27' trailer and dispatching it twice as often would improve service.



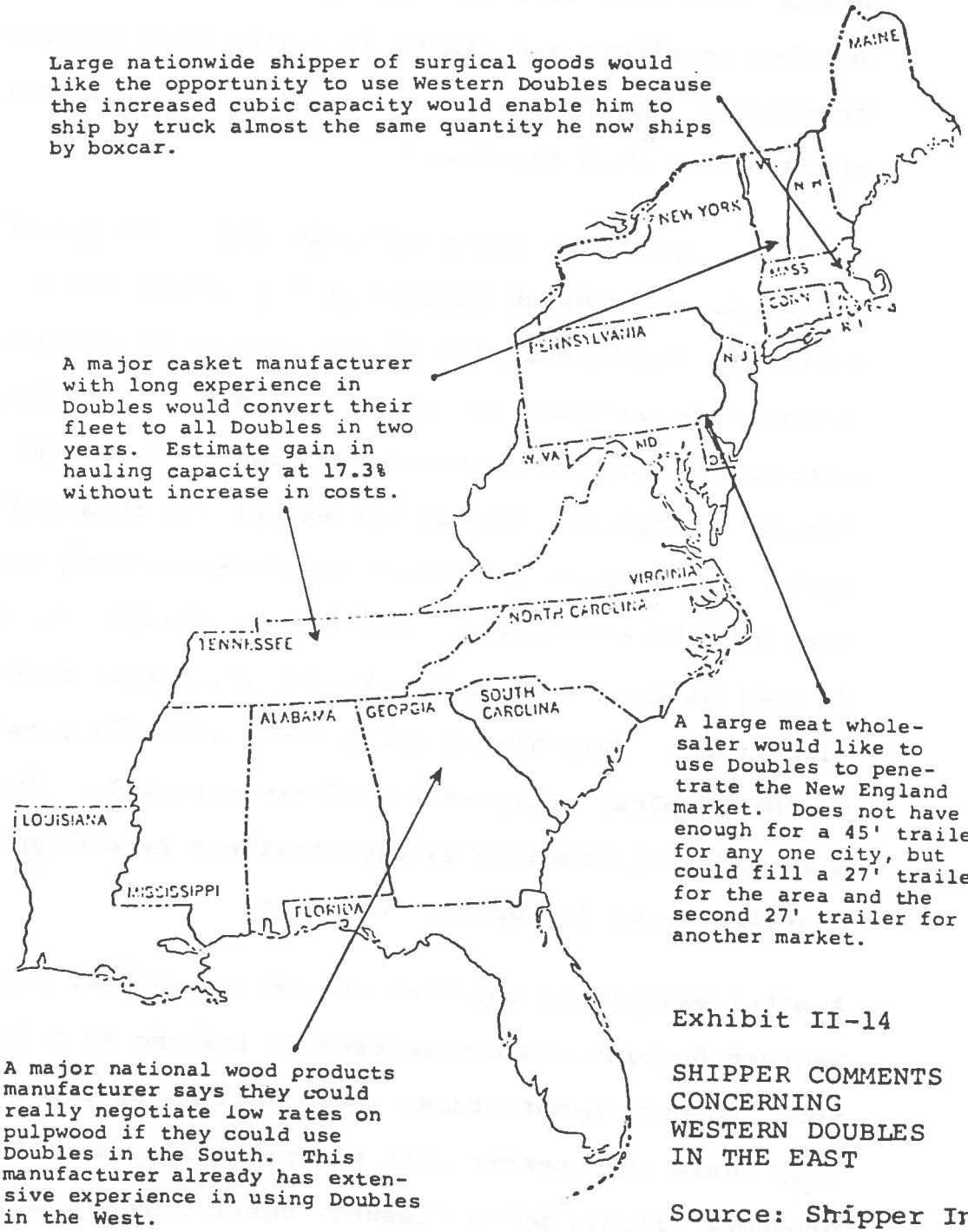
Leading Eastern north-south carrier would use doubles system-wide. Transition would take some time as it is difficult to maintain a dual system of both doubles and singles. Now trying to run a parallel system where Western Doubles are permitted in West and Southwest. They have to balance their equipment every 24 to 36 hours, so they will not have all 2 axle tractors at one end and all 3 axle tractors at the other end.

A major southern carrier with applications pending for routes between Houston and Jacksonville, Florida and St. Louis and St. Louis and Memphis would like to use doubles on these routes. They had some experience running doubles in Maryland, and between Kansas City and St. Louis. Good equipment is important. Previously used older equipment and encountered problems.

Exhibit II - 13

MOTOR CARRIER COMMENTS CONCERNING WESTERN DOUBLES IN THE EAST

Source: Carrier Intervie



Large nationwide shipper of surgical goods would like the opportunity to use Western Doubles because the increased cubic capacity would enable him to ship by truck almost the same quantity he now ships by boxcar.

A major casket manufacturer with long experience in Doubles would convert their fleet to all Doubles in two years. Estimate gain in hauling capacity at 17.3% without increase in costs.

A large meat wholesaler would like to use Doubles to penetrate the New England market. Does not have enough for a 45' trailer for any one city, but could fill a 27' trailer for the area and the second 27' trailer for another market.

A major national wood products manufacturer says they could really negotiate low rates on pulpwood if they could use Doubles in the South. This manufacturer already has extensive experience in using Doubles in the West.

Exhibit II-14

SHIPPER COMMENTS CONCERNING WESTERN DOUBLES IN THE EAST

Source: Shipper Interviews

specific savings can be identified for Western Doubles, but other offsetting system costs mask any clear bottom line benefits, (3) rate levels in Western Doubles territory are generally higher than in single territory, and (4) service for LTL shipments is one-third better with doubles.

Private trucking contract carriage and owner-operators are major and growing factors in East Coast motor carriage. While examples of application of Western Doubles can be found for these classes of carriers, most use 45-foot trailers as the traffic moved is largely truckload. One of the exceptions is a mid-western centered major casket manufacturer with long time doubles experience. The caskets always cube out so they utilize Western Doubles in all states that will allow them. They have a split fleet with 60% singles to 40% doubles. They back haul raw materials. They have modified standard 27-foot trailers by adding an underframe box for greater capacity.

Another example of the adaptability or special use of Western Doubles was encountered in talking to a national wood products manufacturer about West Coast operations. They could not compete with the railroads on paper products (light, bulky tissues) until they got twin trailers. Now they load 120 additional cases on the

twins versus what the singles used to handle. For deliveries in urban areas, they drop off one trailer to be handled by a local tractor and go on to a neighboring area to deliver from the other trailer. Then on return, they pick up the empty trailer and return home.

G. Doubles on the Toll Roads

Two types of doubles operate on the toll roads in Indiana, Ohio, New York, and Massachusetts, 65 foot Western Doubles and the longer "Turnpike Doubles", twin 40 and 45 foot trailers. Table II-4 "Tandem Trailers on Toll Roads", was compiled with data from the toll road authorities in the four states. Indiana just inaugurated a change in length and weight limits in order to lighten the axle and total loads on their roads. That limit change has already impacted the operation of the Ohio Turnpike where their Western Terminal is handling a greater number of units being broken up to remain legal for passage through Indiana. This change will probably be felt all the way from Chicago to Boston and New York, since much of this traffic has these points for its termini. Some of the companies operating in Indiana will not be impacted such as United Parcel Service. Their rigs are less than 98 feet in overall length and the parcels

Table II-4 - Tandem Trailers on Toll Roads

Turnpikes	Tandems Since	Maximum Weight Limits (after 10/1/79	Maximum Length	# of Assem. Areas	Companies Authorized To Operate Tandems	1978 Trips Turnpike Doubles	1978 Trips Western Doubles	Length In Miles
Indiana Toll Road	1960*	127,400#'s	108'	1	29 AB	40,321	E	157
Ohio Turnpike	1960	127,400#'s	108'	19	36 B	45,725	E	241
New York Thruway	1959	143,000#'s	108'	30	133 C	D	D	559 to NYC 387 to Mass Turnpike
Massachusetts Turnpike	1959	127,400#'s	108'	4	59 C	38,162	31,643	135

Note A - Before October 1, 1979 Indiana had 29 after that no authorization needed.

Note B - Indiana and Ohio do not regulate 65' Doubles because they are legal on all roads.

Note C - New York and Massachusetts regulate all tandems

Note D - New York stopped keeping count in 1973.

Note E - Indiana and Ohio do not count Western Doubles trips as they are not specially permitted.

Source: Conversations with Toll Road Authorities

* Maximum limits after 10/1/79: 98 feet and 90,000 pounds

are generally lighter than even LTL freight so that they would not exceed or even come near the 90,000 pound limit.

The usual operation for traffic bound to Philadelphia, Pittsburgh or south would call for make-up of a Turnpike Doubles at the West Point terminal yard in Hammond. This make-up yard serves the whole Chicago metropolitan area. From that point, the rig would go to the Youngstown-Poland area for breakdown to proceed on the Pennsylvania Turnpike as singles into Pennsylvania and north or south from there.

For traffic bound to Boston or New York City via the New York Thruway, the make-up is the same, but the rig is broken down in the Cleveland area instead. It proceeds from the Cleveland area as singles on I-90 through the eastern part of Ohio and thence through Pennsylvania. On arrival in New York on the Thruway, the Turnpike Doubles can be assembled again if the destination is sufficiently distant to warrant it or the trailers can proceed to a nearer destination as singles. If the Turnpike Doubles is reassembled, it can proceed to another assembly area on the Massachusetts Turnpike or on the New York Thruway nearest to its destination. There it is broken up and moved singly from the assembly area to the nearest terminal. It is obvious from this description that the use of Turnpike Doubles would flourish in this no-man's land through Pennsylvania if they were allowed. A more detailed discussion by state of toll road tandem operations follows:

- Indiana Toll Road -

With the recent lowering of Indiana's weight and length limits, the Indiana Toll Road Authority has done away with special certification of these carriers due to political pressure from the Fraternal Association of Steel Haulers on the Governor. The high load limits on the toll road were scrutinized in a hot bed of political interest. The Governor took the case for preserving the roads against the incursion of the overloaded trucks, to the people and won the political fight. Note that this probably means more jobs for truckers not less. Now the 29 carriers using Turnpike Doubles will shift to vehicles which fall into regular axle count rate classes similar to the New York procedure. Because the Indiana toll road is 157 miles overall there is not much intra-state tandem traffic. Virtually all of the traffic which is made up in the Calumet area is bound out of Indiana. Since Western Doubles are legal on all Indiana highways, there is no special program to handle or count them on the toll road and they are included with all five axle combination tractor trailer lengths to accommodate the Indiana Toll Road's new policy. Of course some may just go to singles if the weight limit is impacted before the cubic capacity restraint. Shorter tractors and shorter trailers will combine to bring the overall length within 98 feet. The Indiana action does not appear to presage any industry or state desire either for longer or shorter trailers. It appears to be merely a skirmish in the overall battle between unions and trucking companies about jobs.

- Ohio Turnpike -

The average trip by a Turnpike Doubles was 150 miles. In 1978, there were 6,851,478 vehicle miles of travel produced by Turnpike Doubles operations on the Ohio Turnpike. The peak month during 1978 was October when 10% of all Turnpike Doubles miles were generated. It is interesting to note that United Parcel Service, Inc. generated 33.1% of those vehicle miles with 1819 trips at an average of 125.1 miles per trip. Next, Spector Freight System generated 29% of those vehicles miles with 1150 trips at an average of 173.4 miles per trip. The third major user is Herriott Trucking with 5.9% of August's total miles. Herriott produced these vehicle miles with 174 trips at an average of 231 miles per trip.

For a tandem tractor trailer between 65 feet and ninety feet in length the maximum gross weight allowed is 90,000 pounds and the axle limit is 21,000 pounds. For those combinations over ninety feet the gross weight allowed is 127,400 pounds. There are five assembly areas on the turnpike and the one at Interchange 16, ten miles west of the Pennsylvania line, is used to break all doubles for transit through Pennsylvania as singles on the Pennsylvania Turnpike. The tandem trailer assembly area at the Maumee-Toledo interchange has taken on a new emphasis with the restrictions imposed by Indiana. Turnpike Doubles, greater than 98', which used to proceed all the way to the Calumet area, now have to be broken at the Maumee-Toledo interchange for passage through Indiana. There may not be enough room temporarily in the assembly areas but

as new equipment and procedures are acquired the problem should be refined. It may be necessary for the Ohio Turnpike to restrict Turnpike Doubles if as a result of the Indiana actio some operators drop trailers outside the assembly areas. Already some assembly areas are so crowded that it has been necessary to restrict the number of companies using them. The maximum grade on the Ohio Turnpike is 2% and the longest is approximately 3 miles so the minimum speed of 40 M.P.H. is quite reasonable. The Ohio Turnpike requires that the forwar tandem trailer be reinforced in order to stand the strain of attachment of a coupling device to tow the last trailer and dolly.

It should be noted that the Ohio Turnpike bonds will be paid off in 1981 so that the road will revert to a regular state highway and only "legal" truck operations will then be permitted i.e. Western Doubles, no Turnpike Doubles.

- New York Thruway -

In 1959 the New York Thruway was the first major toll road to authorize tandem trailers longer than 65'. Massachusetts followed shortly thereafter. In 1976 the New York Thruway passed the one billion vehicle miles of travel mark for tandem operations. Since 1975 their ticketing of tandems has changed so that they no longer have a count of all tandem trailer trip: There are 133 carriers authorized to use tandems on the Thruway. Only three of these, Consolidated Freightways, Navajo, and Pacific Intermountain Express use 65 foot Western Doubles.

During the last six months, of the ten companies which were newly certified during that period to use Turnpike Doubles, eight are private or contract carriers while two are common carriers. Genessee Brewing started a Turnpike Doubles operation in mid-October, 1979.

- Massachusetts Turnpike -

In 1959 the Massachusetts Turnpike allowed tandem operations soon after the New York Thruway inaugurated them. Most regulations including certification are reciprocal between the two toll roads. Massachusetts like Indiana is the end of the line (or the start) for many trips. The assembly area at Route 128 in Weston, Massachusetts is constantly in use with up to 20 trailers parked there at one time. The other assembly areas are at Beacon Yard in Boston, Springfield and Milford.

A look at the last 6 years of tandem operations on the Massachusetts Turnpike is instructive.

Year of Count	Count of Western Doubles 5, 6, or 7 Axles	Turnpike Doubles 8, 9 or 10 Axles	% Tandems of all Tractor-Trailer Combinations
1973	29,079	32,604	2.4%
1974	28,866	32,964	2.5%
1975	28,047	27,491	2.3%
1976	28,134	31,280	2.2%
1977	31,168	32,809	2.2%
1978	31,643	38,162	2.2%

For five years there was little change in the number of Turnpike Doubles while the Western Doubles gradually grew year after year. During the last year, the Turnpike Doubles volume suddenly grew. Of course, if the percent tandems of all tractor trailer combinations remains the same (2.2%) then that means total usage of 40-45 foot trailers grew more than Western Doubles usage overall, so that Western Doubles fell in relative use while Turnpike Doubles usage increased both absolutely and relatively on the Massachusetts Turnpike during 1978.

The pattern of usage on the turnpike is interesting. Apparently the smaller doubles go the longer distance as average trip lergth for Western Doubles in 1978 was 93 miles while Turnpike Doubles went an average of 75 miles. This is borne out by the following tabulation of tandem usage by the four terminal areas on the Massachusetts Turnpike:

	1978 Existing Tandems	
	Western Doubles	Turnpike Doubles
Springfield	3,828	11,265
Millbury	6,550	3,019
Weston	4,352	1,983
Boston	1,827	2,089
	16,557	18,356

It appears that a few carriers with strong orientation to the Springfield area have used the Turnpike Doubles as part of their fleet. They bring the Turnpike Doubles into Springfield from the West (and South from New York City via the New York Thruway) and at Springfield they can send them

out as singles to the North, South and East. Sometimes they send them to the East as Turnpike Doubles again if the make-up is there.

III. MARKET AND CARRIER CHARACTERISTICS (TASK 2)

A. Introduction

At the start of the project, it was thought that certain types of freight and certain types of carriers might find it more advantageous to use Western Doubles than others. For example, since one of the obvious benefits of the Western Doubles is increased cube, it was thought that light density products would gravitate toward Western Doubles and conversely, heavy density products would be more efficiently handled in long singles.

One of the first problems encountered was the lack of carrier data to link specific kinds of freight with specific trailer configurations. Carriers simply do not maintain movement records that show the type of freight handled in relation to the equipment configurations available. However, enough Western Doubles users advised that this configuration was used predominantly in handling less than truckload (LTL) freight so that this "conventional wisdom" was validated. There are a number of additional and more specific breakdowns that are covered in this section that were validated through observation and statistical analysis. A table is also included showing both the market and carrier characteristics favoring the Western Doubles configuration.

B. Background

The Western Doubles configuration has been used in various

carrier applications for over 30 years. The initial use was in the West Coast and Mountain States and has spread east as far as the Mississippi River and slightly beyond. Within the states that permit Western Doubles their use is not universal. Their use has never exceeded the percentage utilization of singles. In the 30 year period since their introduction, there has not been a major shift to this type trailer, and users of Western Doubles have not been successful in organizing a major campaign to permit their universal use. Rather, the battle for Western Doubles has only recently been mounted on a state by state basis.* The basis for the legal actions has been "discrimination" and "obstruction of interstate commerce."

This section of the report deals with the problem of isolating and evaluating the various factors that might influence the use or preference for Western Doubles configuration.

C. Inherent Advantages of Western Doubles

Interviews with carriers have developed the following advantages of Western Doubles:

1. Larger capacity-Two 27/28 foot doubles have about 20% greater cube than a single 45' semi-trailer.

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* Raymond Motor Transportation and Consolidated Freightways v Zel S. Rice et.al. case No. 75-C-172 U.S. District Court - Western District of Wisconsin

Consolidated Freightways Corporation of Delaware v Raymond Kassell and the Motor Club of Iowa civil No. 78-179-1

2. Operating efficiencies

a) More "marks"* can be loaded for line-haul operation -- a "mark" is a shipment loaded on the front or rear of a trailer that can be delivered direct to the consignee without handling over the dock. Two 27 foot trailers have the potential of four "marks" whereas a 40/45' trailer only has two. Further, the front portion of a long single trailer normally has too much freight behind it to be used as a mark position.

b) The shorter "PUP"* trailers, when used singly, are easier to maneuver in congested urban areas than 40/45' trailers for the pick-up and delivery of freight. Most carriers who operate exclusively in the east and south generally use some PUP type trailers in the 28/35' lengths for pick-up and delivery operations, while 45' trailers are used for the line-haul. Freight picked up in a Western Doubles trailer can more frequently be delivered in the same trailer, thus bypassing dock handling.

c) Greater dispatching flexibility - this factor greatly depends upon the volume of freight generated by a terminal for the other terminals in the carrier

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*Mark - generally 5000 pounds. May differ by carrier.

*Pup = any trailer less than 35' in length used for pick-up and delivery.

system. The efficiency generally is created by loading two Western Doubles trailers both going in the same direction but destined for different terminals. From Boston, for example, if a carrier has one Western Doubles trailer for St. Louis and one destined for Cleveland, after delivery of the Cleveland trailer, another St. Louis bound trailer may be matched in Cleveland with the Boston origin trailer. This physical moving and matching of units at the terminal is called hostling.

The "conventional" eastern type of operation would load the freight to a central break bulk terminal where the freight would be handled "cross dock" and matched with other freight going to each destination.

d) Improved service - the above operating efficiencies permit the carrier to provide better transit time service for its customers.

Carriers cite the following disadvantages of Western Doubles:

1. Higher capital cost for equipment.
2. Higher tare weight of the double unit.
3. Equipment balancing problems - if a carrier operates a mixed fleet of Western Doubles and 40/45' trailers two different types of tractors are also required.*

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*Caused by tractor length limits and fifth wheel spacing.

Thus, it is easy for a fleet to become "out of balance" with the tractors at a specific terminal not matching the trailers. One large commom carrier operating a mixed fleet plan for a 10% "mis-match" and balances the fleet every 24 hours. This balancing is carried out by reviewing the present situation and changing the dispatch of types of trailers to restore proper balance over the next 24 hour period.[2]

4. Truckload shippers that can fully utilize the weight or cube capacity of a 40/45' trailer generally do not want the inconvenience of loading (and receivers unloading) two trailers. The "break" in the loading/unloading operation is costly and aggravating to shippers and receivers who simply will not tolerate the added inconvenience caused by a doubles operation.

5. Increased hostling costs - moving trailers within the terminal area for loading and matching with another trailer.

6. Higher Maintenance Cost - 16% more maintenance cost for 20% more cube. See Exhibit V-1 "Item 22 Maintenance & Repairs." Comparing Tractor, Diesel Powered, T.L. 2 Axles, plus Converter Gear (Dolly) plus Two Vans, 1-Axle, 21-27' to Diesel Powered, T.L. 3 Axles, plus One Van 2-Axles, 35-40' results in 16% difference.

It is not within the scope of this study to weigh the detailed cost advantages and disadvantages of Western Doubles. Some general cost relationships were developed in the rate relationships section but were generally inconclusive. Not considering the cost aspects, the popularity of Western Doubles in the West Coast states attests to the fact that some general commodity common, contract and private carriers are able to utilize their inherent advantages. These primary advantages are increased cube and greater efficiencies in freight transfer operations.

D. Typical Carriers Using Western Doubles

All types of carriers might use Western Doubles. Some typical applications and the reasons therefore are outlined below. The general commodity common carriers that were interviewed usually paid little attention to the density of freight when deciding trailer dispatches. Their overriding consideration was overall operating efficiency. In fact, for two major common carriers that provided load data, the cube of Western Doubles trailers was not as well utilized as the cube of 45' trailers for miscellaneous loads of LTL merchandise.*,3 The average density of common carrier LTL freight is 12.5 lbs. per cubic ft.** At 12.5 lbs. per cubic ft. density LTL freight will "cube-out" a 45' trailer before it "weighs out" under any of the existing

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* 669# per running ft. for Western Dobules vs. 734# for 45' trailers. 622# per running foot for Western Doubles vs. 695# for 45' trailers.

** "Fuel and Labor Savings Through Greater Truck Sizes and Weights", Ben Encisco, Feb. 1978, page 26.
American Trucking and the Energy Crisis, ATA, page 4.

gross weight limits. The same traffic will "cube-out" a Western Doubles rig only at limits greater than 73,280 lbs.

"Conventional wisdom" supported by carrier interviews holds that the greatest attraction of Western Doubles is with LTL freight. To verify this point an analysis was made of 34 major carriers" to determine for those carriers that could use Western Doubles, if there was a relationship between the LTL freight and Western Doubles use. Although there are exceptions (PIE and Interstate) the Table III-1, "Operating Ratios and Percentage of LTL Freight of the Nation's Largest Common Carriers Whose Trailer Fleet is Comprised Less Than 50% Western Doubles", and Table III-2, "Operating Ratios and Percentage of LTL Freight of The Nation's Largest Common Carriers Whose Trailer Fleet is Compris More Than 50% Western Doubles", shows that the greater the percentage of LTL freight the higher the percentage of Western Doubles trailers. If PIE and Interstate are excluded from Table III-2, the average percent of LTL freight is 47.4% compared to 34% for those carriers whose fleet is basically comprised of 45 foot traile Thus, most general commodity common carriers with a large percentag of LTL freight could be expected to seriously consider using Western Doubles in the East and the South.

Most contract carriers transport commodities requiring specialized equipment or large full capacity truckloads. A small percentage of contract carriers could be expected to have operations that

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*These 34 carriers representing all those with operating revenues of over $100,000,000, and in the aggregate accounted for over 45% of the total tons hauled and 55% of total common carrier revenues.

would benefit from either the greater cubic capacity of Western Doubles or the increased distribution efficiencies. The operational methods used by contract carriers usually parallels those of private carriers more closely than those of common carriers because contract carriers are often substitutes for private carriers.

Selected private carriers benefit from Western Doubles depending on the density of their freight and the type of distribution. Private carriers hauling light density freight relatively long distances (over 200 miles) or with peddle type operations that can benefit from the "mark" efficiencies of Western Doubles sometimes use this configuration. A specific example of this was a large paper and forest products company shipping light weight paper products in Western Doubles. This private carriage operator documented the advantage of being able to load an additional 120 cases of this product per dispatch. This equates to a 33% gain over the capacity of a long single trailer. For loads of dense plywood this same carrier preferred a 45' single that could load an additional pallet of lumber as opposed to the use of two smaller trailers. This equates to an additional 3,000 lbs. or a 7% increase in payload. Another example of a carrier that could take advantage of the operational efficiencies of Western Doubles would be a gasoline distributor delivering to stations from a distribution center. A full Western Doubles tank trailer could be dropped at the first station to be unloaded by them, while the driver continues on with the remaining tank to

complete his deliveries, returning to pick up the first empty on his trip back to the refinery or distribution center. This type of operation increases both driver and tractor utilization.

Another private carriage Western Doubles distribution philosophy is illustrated by the operation at Alpha Beta Stores, headquartered in Alhambra, California with retail grocery stores located throughout the West Coast. Alpha Beta distributes more than 100 loads per day to their stores with a trailer fleet consisting of 400 26-foot doubles. This comprises 75% of their total trailer fleet. Of the 400 doubles, 330 are dry vans and 70 are refrigerated units.

Distribution of merchandise to stores is accomplished more efficiently through doubles because many stores require a combination consisting of both perishables and other grocery items which cannot be mixed. Alpha Beta distributes to these locations with a refrigerated unit coupled to a dry van.

TABLE III-1

OPERATING RATIOS AND PERCENTAGE OF LTL FREIGHT OF THE NATIONS LARGEST COMMON CARRIERS WHOSE TRAILER FLEET IS COMPRISED LESS THAN 50% WESTERN DOUBLES

	Operating Ratios	Western Doubles Percentage	Percent LTL Tons is of Total Tons
American Freight System	99.8	40.4	47.5
Arkansas Best Freight	92.2	16.6	28.6
Associated Trucklines	94.1	24.0	35.3
Bowman Transportation	89.0	0	21.9
Branch Motor	96.6	0	37.1
Carolina Freight Carriers	95.2	0	34.0
Central Freight Lines	94.1	5	41.0
Gateway Transportation	101.1	20.4	25.5
Jones Motor	95.7	0	33.0
Leeway Motor	83.7	29.4	40.2
Mason & Dixon	96.2	0	24.8
McLean Trucking	94.9	25.0	39.6
Navajo Freight Lines	103.4	16.6	18.1
Overnite Transportation	86.0	0	33.9
Pilot Freight Carriers	94.8	0	35.3
Preston Trucking	92.8	6.7	40.5
Roadway Express	89.8	0	55.9
Ryder Truck Lines	91.3	0	21.4
Smith's Transfer	91.5	13.7	38.2
Spector Industries	95.9	0	26.3
Time - DC	95.4	48.6	26.7
Transcon Lines	96.0	33.0	39.1

TABLE III-1 - Continued.....

	Operating Ratios	Western Doubles Percentage	Percent LTL Tons is of Total Tons
Wilson Freight	101.4	0	34.7
Yellow Freight System	91.5	31.1	37.6
AVERAGE	94.3	12.9%	34.0%

TABLE III-2

OPERATING RATIOS AND PERCENTAGE OF LTL FREIGHT OF THE NATIONS LARGEST COMMON CARRIERS WHOSE TRAILER FLEET IS COMPRISED MORE THAN 50% WESTERN DOUBLES

	Operating Ratios	Western Doubles Percentages	Percent LTL Tons is of Total Tons
Consolidated Freightways	76.3	77.6	55.8
Delta Lines	89.4	100.0	70.6
East Texas Motor Freight	93.8	60.4	31.6
Garrett Freight Lines	92.4	96.9	47.5
I M L Freight	99.2	76.0	41.3
Illinois - California Express	93.7	55.5	34.5
Interstate Motor Freight	95.4	78.9	19.0
) N C Freight Systems	102.4	100.00	56.0
Pacific Intermountain Express	92.4	81.5	15.9
Red Ball Motor Freight	94.7	61.0	41.5
VERAGE	93.0	78.8%	41.4%

This system is obviously more efficient both in terms of service and cost than tendering two tractors and trailers per store.

E. Freight Characteristics

The following factors were suggested by carrier personnel as exerting an influence on the type of trailer configuration that could be most efficiently used. These factors are defined below and then ranked in Table III-3 "Freight Characteristics Related to Singles or Doubles Trailer Selection" as to whether they could logically be handled more efficiently in a doubles or a singles trailer operation:

- Density - The density ratings in the freight classification usually break at 1, 2, 4, 6, 8, 12 and 15 pounds per cubic foot (PCF)*. For simplification, light density will be defined as any freight weighing less than 6 pounds PCF, medium density is between 6 and 15 pounds PCF and heavy density is 15 pounds and over.

- Average Shipment Size - Each Tariff Bureau has its own "weight breaks" for pricing purposes. For example, the Middle Atlantic Conference weight breaks are at 500, 1,000, 2,000, and 5,000 pounds while the Pacific Inland

*National Motor Freight Classification No. 100-F, ICC NMF 100-F Items 157320, 103300

Tariff Bureau breaks are at 1,000, 2,000, 5,000, 10,000 and 20,000 pounds*. In this analysis, average shipment size may be a determining factor in choosing double bottoms over long single trailers. Average shipment size is related to density. While a specific study cannot be referenced, several carriers interviewed stated that as average shipment size increases average density increases, and also that over the last decade average density has been decreasing. This was attributed to the trend toward consumer packaging that is designed to do more than simply protect the contents i.e., meet marketing goals. Also, as one moves along the distribution chain for manufacturing toward consumer shipments, the shipment unit is smaller and the packaging is more bulky. Thus, it is logical to assume that considered alone, small shipment sizes would tend towards Western Doubles with their greater cubic capacity and larger shipment sizes (TL shipments) would go in long single trailers.

- Commodity - Commodity class is an arbitrary number assigned by the appropriate Classification

*Middle Atlantic Conference Tariff 501-D, ICC MAC 501-D
Pacific Inland Tariff Bureau Tariff 302, ICC PIN 302

Committee to subjectively rank each article of freight in relation to all other freight. The classes run from a low class 22½ for truckloads of very dense, difficult to damage freight, up to class 500 which might cover very light, fragile and valuable merchandise.

- Physical Characteristics of Freight Other Than Density

  In interviews with carrier representatives, general physical characteristics were explored such as susceptibility to damage, protection from heat or cold, palletized or unitized loads and value per pound. The results of this review were very similar to the freight classification comparison as these characteristics are major factors in the determination of the classification rating for a product.

TABLE III-3

FREIGHT CHARACTERISTICS RELATED TO
SINGLE OR DOUBLES TRAILER SELECTION

	LTL	VOL	TL
Density			
• Light Density 0-6 PCF	D	D	D
• Medium Density 6-15 PCF	D	D	D
• Heavy Density 15-UP PCF	D	DS	S
Average Shipment Size			
• 0-500 lbs.	D	D	NA
• 500-1,000	D	D	NA
• 1,000-5,000	D	D	NA
• 5,000-10,000	D	D	DS
• 10,000-20,000	D	DS	DS
• 20,000 and over	DS	DS	DS
Commodity Class			
• Class 70 and over	D	D	D
• Class 50-70	D	DS	DS
• Class 50-Under	DS	DS	S
Physical Characteristics			
• Fragile	D	D	DS
• Protection Heat or Cold	DS	DS	S
• Palletized/Unitized	DS	DS	S
• Value/lb.	NA	NA	NA
Portion of MFG/Distribution Cycle			
• Raw Material	DS	DS	S
• Work in Process	DS	DS	DS
• MFG to Warehouse	DS	DS	DS
• Warehouse to Customer	D	D	D
International Containers	NA	NA	D

D - indicates - Doubles Freight

S - indicates - Singles Freight

DS - indicates - Either Doubles or Singles

NA - indicates - Not Applicable

LTL - Less than Truckload

VOL - LTL Shipments of from 15,000 to 24,000 lbs.

TL - Truckload

1. Density

A review of Table III-3 as well as the results of carrier interviews indicated that freight which is light and bulky is particularly well suited to transportation in Western Doubles. This is because of the greater cubic capacity available. However, some carriers report that even LTL and volume freight having a high density per cubic foot (eg. over 15 pounds per cubic foot) may potentially move in Western Doubles. In these applications, carriers are willing to sacrifice the additional payload of a long single for the opertional flexibility of a Western Doubles as a means of reducing terminal and platform expense.

A Class I western carrier said he transports every LTL and volume shipment in Western Doubles regardless of density. This operational choice was made in order to minimize platform expense. For this carrier, only full truckloads of high density material are transported in long single trailers.

Several carriers indicated they believed the use of Western Doubles trailers would continue to increase because each year the average density of miscellaneous freight decreases. This decline in average density is caused by the more sophisticated use of packaging as a marketing tool resulting in less efficient packing for transportation purposes. An example of this

is the use of blister packaging for razor blades. Thus, carriers transporting miscellaneous freight are constantly seeking additional cubic capacity for their freight containers.

2. Average Shipment Size

Average shipment size influences trailer selection in two ways. One is indirectly through density considerations and the other is through use of the "mark" concept.

Density decreases as average shipment size decreases. The smaller the average shipment size, the lower the average density. To the extent this relationship is valid, carriers transporting smaller average size shipments will become more likely candidates for increased cubic capacity offered by Western Doubles.

Dispatchers refer to large LTL shipments that can be loaded either in the nose or on the tail of a trailer as "marks". These shipments or "marks" can then be delivered directly to a terminal or consignee to avoid rehandling over the dock. Some carriers issue general loading instructions that any shipment weighing 5,000 pounds or more must be treated as a "mark" and handled accordingly.

3. Commodity Class

To the extent that commodity class reflects the average density of a product, class is an important consideration in the use of Western Doubles. For example, in item 157300 of NMFC No. 100-D, the National Motor Freight Classification, the following class ratings are strictly dependent on density.

Density	Class
less than 1 p.c.f.	400
1 - 2 p.c.f.	300
2 - 4 p.c.f.	250
4 - 6 p.c.f.	150
6 -12 p.c.f.	100
12 -15 p.c.f.	85
over 15 p.c.f.	70

Thus, it can be seen that density is an important consideration in classificaton rating. From this relationship, one would logically expect that higher rated freight would more likely be handled in a doubles operation and very low rated freight in a long singles operation.

4. Physical Characteristics Other Than Density

The physical characteristic which affects the use of Western Doubles most often is the length of commodities to be transported. Obviously, goods of great length such as steel beams over 28 feet in length are not going to fit in Doubles trailers. Commodities such as mail, parcels, freight forwarder traffic and con-

tainer or trailer on flat car freight especially lend themselves to doubles operations.[4]

5. Portion of the Manufacturing/Distribution Cycle

The segment of the manufacturing/distribution cycle in which goods are being transported often has a bearing on the type of equipment used. Shippers and consignees do not like to hostle trailers at their docks. Therefore, shipments of inbound raw materials; goods which are work in process; and heavy density manufactured commodities moving to warehouse facilities are usually shipped in truckload quantities. For these shipments, shippers tend to prefer long single trailers. On the other hand, lighter density goods destined for a warehouse and finished commodities for final delivery usually move in LTL quantities and these shipments would be more likely candidates to move in Double Bottoms.

6. International Containers

Most containers built today are either 20, 35, or 40 feet in length, but Matson Lines pioneered the use of 27 foot containers in the West Coast - Hawaiian and Asian Trade. These 27's form a very small part of all containers. International containers have now become principally either 20 or 40 foot and most container facilities are geared to handle just these lengths. As a result, the use of Western Doubles for inland transport of international containers in eastern states appears remote.[5]

F. Carrier Characteristics

There are several factors which significantly affect motor carriers that would exert an influence toward selection of either a Western Doubles or a long singles type operation. As with the freight characteristics previously discussed, many times it is a combination of these factors that considered together influence the decision.

Experience in dealing with common, contract and private carriers as well as interviews with specific persons having a background in trucking operations resulted in this list of significant factors. Each factor is defined and then discussed in more detail in the following paragraphs. Table III-4, "Carrier Characteristics Related To Single or Doubles Trailer Selection", is a summary of the eight factors indicating whether their primary influence is toward a single or a doubles operation. These factors are discussed below.

- Terminal to Terminal Traffic Volume

  This measurement represents the daily tonnage that is available on a consistent basis between pairs of terminal points to enable a carrier to accurately pre-plan equipment needs and dispatching schedules.

- Carrier Fleet Size

  Except for the use of owner operators or other outside contractors, a carrier's fleet size is a direct function

of his traffic volume and resulting revenue. Therefore, Class I, II, and III as established by the ICC* for reporting purposes is used:

Class I, all carriers with operating revenues in excess of $3,000,000;

Class II, those carriers with operating revenues exceeding $500,000 but less than $3,000,000;

Class III, those carriers with operating revenues of less than $500,000.

- Type of Route

Carriers are authorized to operate over either regular (assigned) routes or irregular (unassigned) routes.

- Average Length of Haul

Five breakdowns are used as follows:

Commercial zone
Short haul other than commercial zone, i.e. 0-100 miles;
Medium/short haul 100-500 miles;
Medium/long haul 500-1,000 miles; and
Long hauls of over 1,000 miles.

- Type of ICC Authority

  . Common - General Commodity
  . Common - Specialized Commodity (Including Household Goods)
  . Contract
  . Exempt
  . Private

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* 49 CFR 1240.5(a)

- Mix of Traffic

Whether a carrier generally transports a single commodity or a diverse mixture of freight is considered to determine the comparative interest in doubles operations.

- Backhaul

One of the single most important factors influencing carrier efficiency involves the consideration of a balanced movement. There are some traditional geographical unbalanced traffic lanes that were considered e.g. movements to and from the south, southwest, and west coast.

- Inter Versus Intra State Shipments

In order to determine whether there was any difference in the use of Western Doubles based on whether the movement was interstate or intrastate, the movement characteristics of each were evaluated to determine their impact on the use of Western Doubles.

TABLE III-4

CARRIER CHARACTERISTICS RELATED TO
SINGLE OR DOUBLES TRAILER SELECTION

	LTL	VOL	TL
Daily Terminal to Terminal			
• Light 0-10,000 lbs./day	-	-	D
• Medium 10,000-20,000 lbs./day	-	-	D
• Heavy over 20,000 lbs./day	-	-	S
Carrier Fleet Size			
• Class 1	D	DS	DS
• Class 2	D	DS	DS
• Class 3	D	S	S
Type of Route			
• Regular	D	D	D
• Irregular	S	S	S
Length of Haul			
• Commercial Zone	S	S	S
• Short Haul 0-100	DS	DS	S
• Medium/Short Hauls 100-500	DS	DS	DS
• Medium/Long Hauls 500-1,000	DS	DS	DS
• Heavy/Long Hauls 1,000 and Up	D	DS	S
Type of ICC Authority			
• Common General Commodity	D	D	DS
• Common Specialized Commodity	D	D	DS
• Contract	DS	DS	DS
• Exempt	S	S	S
• Private	DS	DS	DS
Mix of Traffic			
• Great Diversity	D	D	D
• Single Product	DS	DS	DS
Backhaul			
• Balanced Operation	DS	DS	DS
• Unbalanced Operation	D	D	D
Inter-Intra State			
• Interstate Shipments	NA	NA	NA
• Intrastate Shipments	NA	NA	NA

D - indicates - Doubles Freight

S - indicates - Singles Freight

DS - indicates - Either Double or Singles

NA - indicates - Not Applicable

1. Daily Terminal To Terminal Traffic Volume

All Fleet operators interviewed agreed with the goal of dispatching trailers direct from origin to destination in order to minimize the expense associated with rehandling freight en-route. Platform costs cited by carriers interviewed range from $0.70 to almost $2.00 per 100 pounds. Statistics available from the ICC confirm an overall average platform cost of about $1.00 per hundred pounds. Thus, anything that contributes to the goal of reduced handling improves the economy of the operation.

A major eastern carrier with 35% LTL of total tons operating in the Northeast and South reports that his operation handles 150 pounds of freight cross-platform for every 100 pounds of revenue freight. A nationwide carrier with 56% LTL of total tons (in the top 4) reports that in the West, his cross-platform handling amounts to 70-75 pounds for every 100 pounds of revenue freight. While in the East, their cross-platform handling amounts to 152 pounds per 100 revenue pounds of freight hauled.[6]

The difference of 75 pounds in cross-platform handling is ascribed by them to their use of Western Doubles. This carrier feels strongly that he could greatly reduce his eastern cross-platform costs by utilizing Western Doubles throughout the East. This carrier cited New England as a

prime candidate for Western Doubles because of the characteristics of the New England market and freight.

In addition to the monetary savings realized through the elimination of break bulk operations, this carrier also cited a service improvement of between one-half and one day for each break bulk operation that could be avoided on an individual shipment. Reductions in transit time not only enable motor carriers to compete more favorably, both inter and intra-modally, but also provide tangible benefits to shippers in the form of reduced inventories and improved cash flow.

2. Carrier Fleet Size

Except for the smallest carriers, there was no discernible relationship between carrier size and the use of Western Doubles. Very small carriers surveyed expressed no interest in the use of Western Doubles because of the problems associated with balancing of fleet to insure that dollies and units were equally distributed. In addition, small carriers could not afford the terminal space and other equipment required for the hostling operations necessitated by Doubles.

3. Type of Route

From the standpoint of ICC operating authority, carriers are authorized to operate over regular (specified highways) or irregular (unspecified highways) routes. Sometimes carriers are granted radial authority which permits them to transport to and from all points within a given radius of a specific point. Considered alone, with no other governing factors, it appears that regular route carriers would use doubles between specific points while irregular route carriers would not want to cope with the operating problems associated with the breaking apart of doubles for their operation.

4. Average Length of Haul

Except for short haul traffic within a commercial zone, there is no direct correlation between the types of carriers observed using Western Doubles and the average length of haul. Because most of the carriers using Western Doubles are located in the west where distances between populated areas are greater, it is easy to show longer average hauls for these trailer configurations. This, however, appears to be a meaningless statistic as other characteristics of freight and markets have more of an influence on the use of Western Doubles than the average length of haul.

5. Type of ICC Authority

In an attempt to characterize the type of carrier who would benefit from the expanded use of Western Doubles, various classes of carriers were explored. This analysis indicated that general commodity common carriers were the group most interested in the use of Western Doubles and exempt carriers were the group least interested in them. All other groups, such as the special commodity common carriers, contract and private carriers all were either using Western Doubles or expressed interest in varying degrees depending upon their particular mode of operation.

One large private carrier has 35% of his fleet in Western Doubles and two major retail chains make extensive use of Western Doubles where permitted. However, many other private carriers make little or no use of these trailers.

One contract and also one common carrier of perishable commodities expressed no interest in Western Doubles and presently operate no trailers less than 40 feet in length. Both are Class II carriers operating from California to the Midwest market area. In fact, both were experimenting with piggy-back service as a viable alternative to over-the-road line-haul and were concerned that a switch to 45' trailers would preclude the use of existing equipment.

In summary, all categories of carriers, except exempt operators, were either using or expressed a strong interest

in Western Doubles.

6. Mix of Traffic

The mixture of traffic handled by a carrier was significant in the selection of an operational mode. Carriers handling predominately LTL general commodity cargo expressed an interest in Western Doubles in order to minimize platform handling costs en route. Only one general commodity common carrier using Western Doubles mentioned freight density as a factor in using Western Doubles for truckload applications. Generally, larger volume truckload moves are handled in a "special commodities division" using only large singles. Several carriers interviewed had such operations.

Carriers handling single commodities, due to the repetitive nature of the traffic flow, would consider freight density in determining the optimum type of equipment.

7. Backhaul

The most important factor cited by carriers in maintaining an efficient operation was the ability to balance their freight movements between all origin/destination points. Since it is sometimes beyond the control of a carrier to maintain a balanced freight operation, and driver/tractor cost is the biggest factor in line haul expense, the ability to pull an empty trailer, or two empty trailers

in the backhaul direction, enables a carrier to reduce the losses caused by unproductive empty mileage. It is simply a matter of being able to increase driver productivity for the inefficient portion of the round trip movement. Further, since freight balance problems are usually not 100 percent, (i.e., everything one way and nothing in the return direction) it is possible to secure enough revenue freight in the backhaul direction to recover the direct operating costs involved. Those carriers operating Doubles cited the ability to pull an empty trailer as an important factor in maintaining a balanced operation.

8. Interstate Versus Intrastate Shipments

Carriers indicated little difference in Doubles use as between inter and intra-state movements. California dominates the intra-state market for the use of Western Doubles between the hub of Los Angeles and San Francisco. Twin trailer operations are also extensively used in inter-state corridors where they are permitted. The corridor between Los Angeles and Chicago is a prime example where Western Doubles are extensively used in an inter-state market. Probably the most important factor influencing intra-state use of Western Doubles is the length of haul (i.e., size of the state) and the intensity of freight movements between major city pairs.

California is a good example of a state with strong intra-state use of doubles. Rhode Island, on the other hand, is much too small to accommodate a sufficiently long length of haul to justify Doubles operations. Therefore, in the east, Western Doubles would likely be attractive to carriers with inter-state operations, and only those intra-state carriers operating in New York, Florida or a few other large states with major markets.

IV. RATES AND SERVICES (TASK 3)

A. Introduction

The objective of this task is to determine if the efficiencies of Western Doubles are passed onto shippers in the form of lower rates and better service and to quantify the pass-through in order to evaluate the impact of Western Doubles on competitive modes of transportation. As explained elsewhere in this report, the predominant use of Western Doubles is for less-than-truckload (LTL) general commodity freight. In this area of activity, the motor carriers have little competition. Railroads terminated less-than-carload (LCL) service decades ago and are not a factor in this market. Furthermore, truck rates are usually too high to attract low value freight that characterizes a large portion of rail carload freight and practically all barge freight.

The only practical area of competitive impact by Western Doubles would be on rail trailer-on-flat-car (TOFC) service. Most TOFC freight can be characterized as truckload or freight forwarder and shipper association LTL. In most cases, motor carriers already provide better service than shipper associations, and therefore, a service improvement by Western Doubles would not attract any significant association business. Airlines, while handling a very small percentage of the available LTL market, provide a service that cannot be matched by the motor carriers. No improvement by the motor carriers would be sufficient to attract any significant business from the airlines.

Service improvements as a result of Western Doubles are discussed in this task. A one-third cut in overall time appears to be the result of employing Western Doubles versus singles.

Relatively little LTL freight moves on commodity rates.* Therefore, a comparison of Eastern and Western class rates would provide a measure of pass-through to the rate structure of Western Doubles efficiency. An analysis was performed to determine if there were more LTL commodity rates published in corridors using Western Doubles than in singles corridors. The answer was positive, but further research showed that a high percentage of these rates was published to meet freight forwarder, TOFC and shipper association competition and could not be considered as caused by greater Western Doubles efficiencies.

The Freight Forwarders were actively in the LCL (Less Than Carload) business long before truckers entered this market. Initially, because the Freight Forwarders provided an expedited pick-up and delivery service as well as better line haul consolidation performance, their rates were about six percent above the prevailing rail LCL rates. When the motor carriers entered the LTL market, they not only copied their freight classification from the railroads but published the same rate levels in order to participate in the market. It was not until the mid 1950's that the Freight Forwarders started using

*It is estimated that 75% of LTL tonnage and 85-90% of LTL shipments move on class rates.

TOFC service and at that point there was only one trans-continental motor carrier. Motor carriers and forwarders continue to compete actively for LTL traffic and maintain very competitive rate schedules. However, initially it was the motor carriers that were forced to meet the Freight Forwarder's rates.

Therefore, based upon the above considerations, the major thrust of this task concentrates on a comparative analysis of the differences in motor carrier LTL and truckload (TL) class rates as between Eastern and Western corridors. A secondary effort covers the service improvements of Western Doubles.

B. Rates

1. Motor Carrier Rates

Motor carrier class rates* expressed on a revenue per ton mile basis have been analyzed for the eight study corridors. Long single corridors in the east (corridors 1, 2, 3) were compared with the Western Doubles corridors located in the west (corridors 4, 5, 6, 7, 8).

The first rate analysis performed used examples from single rate bureaus to represent each mileage block in that corridor. Because of multiple rate bureaus in most corridors, the differences in rate levels between rate bureaus required more in-depth analysis for each corridor.

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* Rates analyzed are at the July 1, 1977 level. A conversion table to 1978 and 1979 rate levels is provided herein.

Truck class rates are published on a mileage basis rather than on a point to point basis. Thus, a class 100 rate for 400 miles is generally the same between any two points within the bureau as between two major metropolitan areas 400 miles apart. Therefore, in order to eliminate rate bureau idiosyncrasies wherever possible, rates for three sets of points in different tariff bureaus for each mileage block (400,800 and 1500 miles) were obtained. These rates were then averaged.

The following is an example of how the average revenue per ton mile for class 100 at 400 miles in corridor 3 for a 500 pound shipment was obtained.

Between	Rate Bureau	Tariff No.	Class 100 Rate Per CWT
St. Paul, MN & Chicago, IL	Middlewest Mtr. Freight Bureau	MWB 501 D	$9.31
Indianapolis, IN & Johnson City, TN	Central & Southern	CSA 501	$9.16
Selma, AL & Jacksonville, FL	Southern Mtr. Carrier Rate Conf.	SMC 500-A	$7.77

The average rate is $8.75 per cwt. which results in an average revenue per ton mile of $0.488.

In order to provide representative LTL rates, the three most common ratings, 100, 77½ and 55 were used. Class 55 is generally the lowest LTL rating and class 100 is the highest rating for all commodities except extremely low density or extremely high value freight. Class 35 is representative of TL class ratings. The following is a general description of these classes:

> Class 100 freight is generally LTL, for example, plastic articles, N.O.I. (Not otherwise indexed) at 6-12#/cubic feet.
>
> Class 77½ freight is generally LTL, for example, hardware, N.O.I.
>
> Class 55 freight is lower value and higher density LTL freight such as printing paper, and other heavy loading commodities.
>
> Class 35 represents TL freight such as canned goods, printing paper and other heavy loading commodities.

The rates for each class were then expressed on a ton-mile basis by dividing the revenue by the appropriate weight and length of haul. For the rate comparisions, a weight of 500 pounds was used for LTL shipments, and 30,000 pounds for TL shipments. These were selected because the overall weight of interstate common motor carrier shipments is

approximately 500 pounds* and 30,000 pounds represents the modal weight break for TL shipments.** The ton-mile rates were then compared corridor by corridor for the same type of shipment and a numeric rank assigned, based on the lowest rate indexed as No. 1 and the next lowest as 2, etc. Where two rates were the same, the same numeric rank was assigned. These numeric ranks were then totaled by corridor. A rate table showing the actual rates used for each mileage block in each corridor appears in the Appendix as Table A-1, "Tariff References for Corridor - Average Rates". Table A-2, "Comparison of Revenue per Ton-Mile For Eight Corridors" also in the Appendix, displays the average rates for each class by mileage block for each corridor. Exhibit IV-1 has been prepared from Appendices A-1 and A-2 which portray the average per ton mile revenue for each Eastern and Western corridor. The data displayed clearly shows that the Western Doubles oriented corridors consistently have rate levels which are higher than those prevailing in Eastern corridors for the average LTL and TL shipment.

The weight chosen for the LTL rate research was 500 pounds as this represents the average size LTL shipment moving in domestic commerce. The analysis did not include shipment sizes between 500 pounds and truckload.

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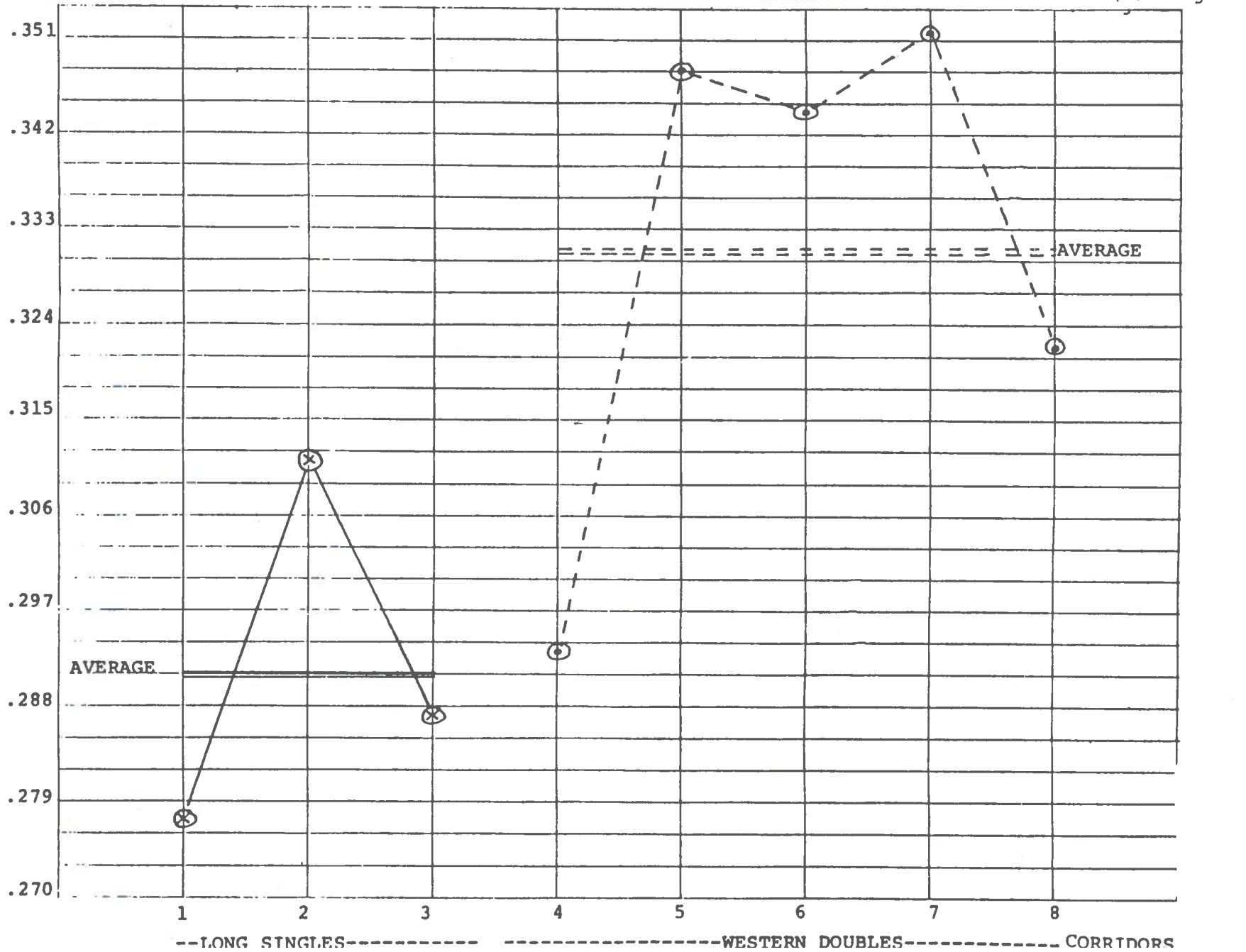
* The Rule of Regulated Motor Carriers in the handling of small shipments, Interstate Commerce Commission, Bureau of Economics Statement No. 67-2, pg. 8,22

** See Table A-3, " Motor Carrier Weight Breaks by Bureau"

To facilitate further comparison, the Eastern and Western corridors were grouped and revenue per ton-mile averaged. The results of this are shown in Table IV-1, "Analysis of Motor Carrier Revenue per Ton-Mile, Long Singles Corridors Compared to Western Doubles Corridors" which aggregates LTL and LT revenues. For all rate and mileage block combinations, the Western Doubles corridors have a 11.6% higher rate level than Eastern Singles corridors. The range of difference in rate level is from 6.6% (for class 55 LTL freight) higher to a striking 35.7% (for class 35 TL freight) higher cost to the shippers in Western Doubles territories. Table IV-1, page 2, "500 Pound Less-Than-Truckload Analysis Of Revenue Per Ton-Mile Long Singles Corridors Compared To Western Doubles Corrridors separates the LTL from the TL statistics. For the 500 lb LTL Class rates, studies (100, 77 1/2 and 55), the westerly rates were 9% higher than the easterly rates. The average truckload revenue per ton-mile for Class 35 at a 30,000 minimum weight was 32% higher in the west than in the east. While there are numerous factors which might explain rate differences between territories, none override the conclusion that whatever cost savings a carrier using Western Doubles may enjoy is clearly not reflected in prevailing rate levels.[7]

EXHIBIT IV-1 400 MILE AVERAGE REVENUE PER TON MILE (CLASSES 100, 77½, 55 AND 35) Page 1



EXIHIBIT IV-1 800 MILE AVERAGE REVENUE PER TON MILE (CLASS 100, 77½,55 AND 35) Page 2 of 4

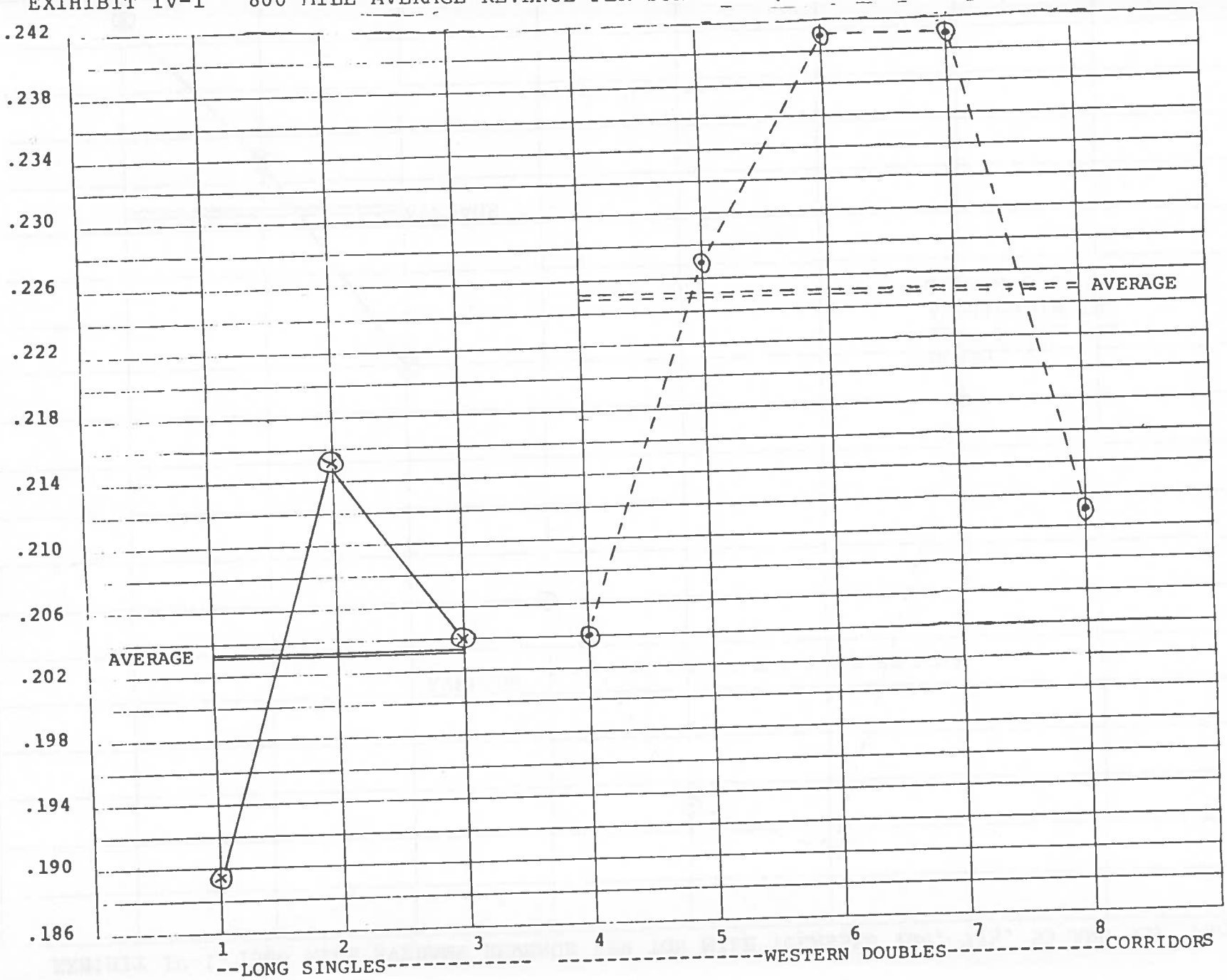


EXHIBIT IV-1 1500 MILE AVERAGE REVENUE PER TON MILE (CLASSES 100, 77½, 55 AND 35)

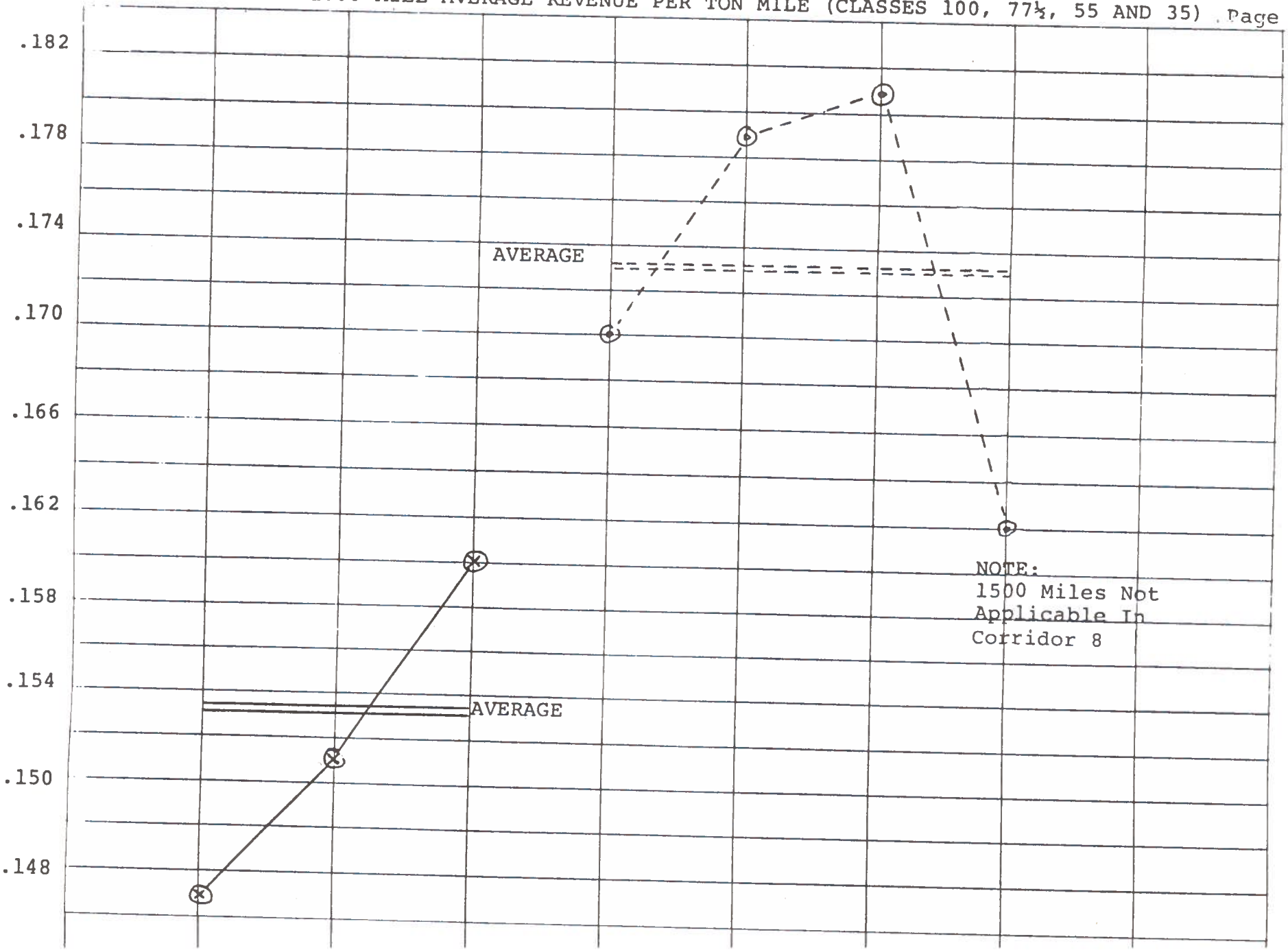


EXHIBIT IV-1 AVERAGE REVENUE PER TON MILE FOR (FOUR CLASSES AND THREE MILEAGE BLOCKS) of 4

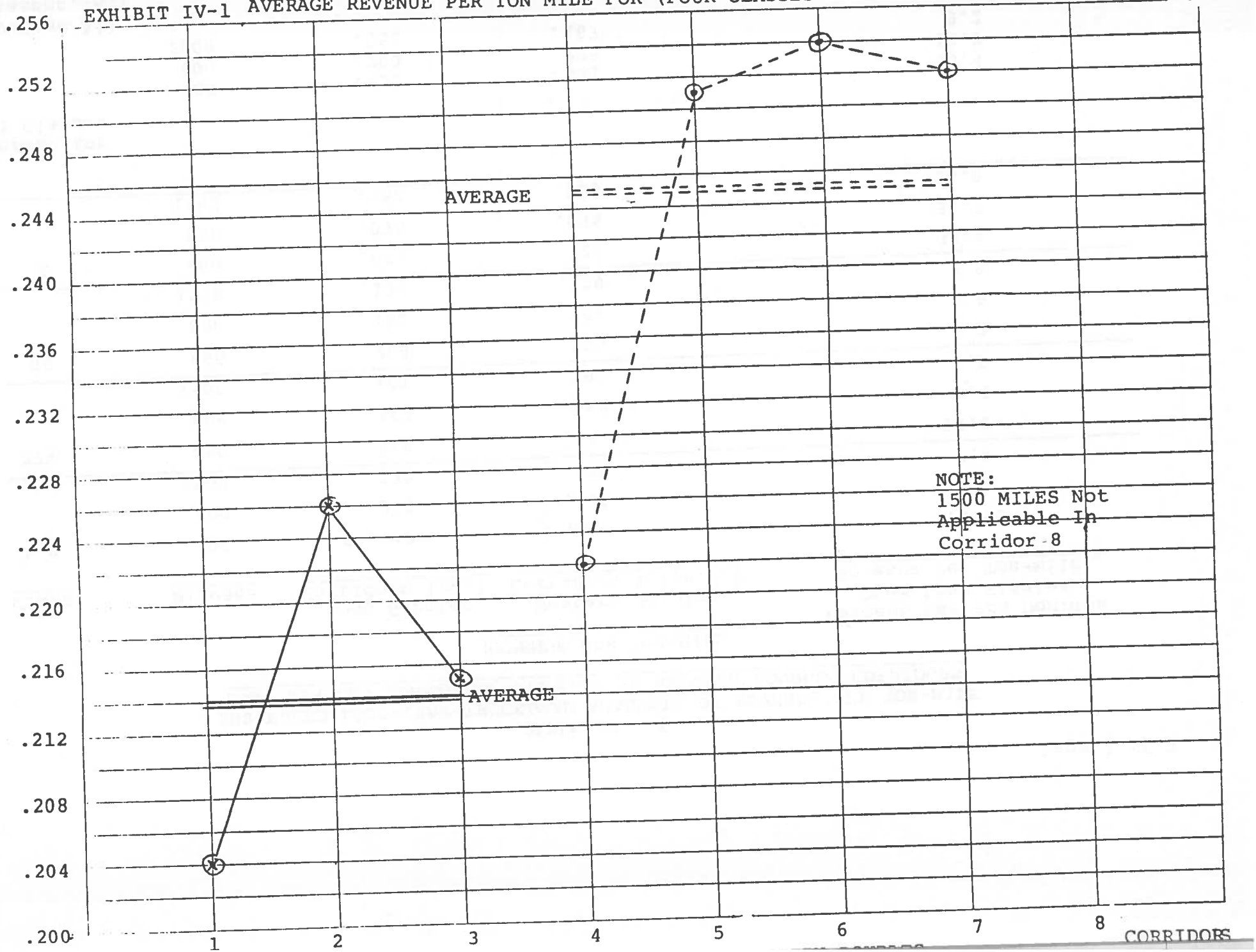


TABLE IV - 1
500 POUND LESS-THAN-TRUCKLOAD ANALYSIS OF REVENUE PER TON-MILE
LONG SINGLES CORRIDORS COMPARED TO WESTERN DOUBLES CORRIDORS

Class	Mileage	REVENUE PER TON-MILE: Long Singles Corridors 1,2,3	REVENUE PER TON-MILE: Western Doubles Corridors 4,5,6,7,8	Percent Western Doubles Over Long Singles Revenue Per Ton-Mile
100	400	$ .447	$ .505	13.0%
	800	.331	.341	9.6
	1500	.232	.250	7.8
77½	400	.358	.405	13.1
	800	.247	.268	8.5
	1500	.181	.195	7.5
55	400	.268	.290	8.2
	800	.182	.194	6.6
	1500	.129	.139	7.8
35	400	.093	.125	34.4
	800	.070	.095	35.7
	1500	.068	.085	25.0
Average for All Classes				
	400	.292	.331	13.4
	800	.203	.225	10.8
	1500	.153	.167	9.2
Average All Classes, All Mileage Bl...		$ .216	$ .241	

TABLE IV-1
500 POUND LESS-THAN-TRUCKLOAD ANALYSIS OF REVENUE PER TON-MILE
LONG SINGLES CORRIDORS COMPARED TO WESTERN DOUBLES CORRIDORS

Class	Mileage	REVENUE PER TON-MILE: Long Singles Corridors 1,2,3	REVENUE PER TON-MILE: Western Doubles Corridors 4,5,6,7,8	Percent Western Doubles Over Long Singles Revenue Per Ton-Mile
100	400	$ .447	$ .505	13.0%
	800	.331	.341	9.6
	1,500	.232	.250	7.8
77 1/2	400	.358	.405	13.1
	800	.247	.268	8.5
	1,500	.181	.195	7.5
55	400	.268	.290	8.2
	800	.182	.194	6.6
	1,500	.129	.139	7.8
Average for LTL Classes	400	.358	.400	11.7%
	800	.253	.268	5.9
	1,500	.181	.195	7.7
Average for LTL Class, All Mileage Blocks		$ .264	$ .288	9.0%

For shipments moving in the Rocky Mountain area, for example, between Los Angeles and Phoenix, the minimums are 20,000 LTL and 40,000 TL. In this region, the 20,000 LTL rate frequently applies although if the minimum weight published in the classification is less than 40,000, it applies.

The Western Bureau does not publish specific truckload minimums. Truckload (TL) traffic moving in the Western Motor Tariff Bureau moves at the applicable minimum weight from the classification. Further, the 20,000 lb. LTL rate was established in the Western Motor Bureau long before it was operationally feasible to load 20,000 lbs. of freight into a 27 foot trailer. Therefore, the 20,000 lb. weight break in the Western Bureau is not considered a significant marketing aspect of the Western Doubles operation.

In the Pacific Inland Tariff Bureau, there is a 20,000 and 40,000 lb. rate and the 20,000 lb. rate is significant only because the 40,000 lb. weight break is so high. However, as in Western Motor Bureau, the actual classification minimum weight will apply and sometimes the cutback point from the classification minimum is sufficient to take precedence over the 20,000 lb. rate.

It should be remembered, in all cases, that the 20,000 pound minimums are LTL rates and not TL rates. If they were TL rates they might be significant. However, since the LTL class rating is always much higher than the TL

rating, a 20,000 pound LTL weight break is not usually applicable to a 20,000 shipment.

In addition to researching class rates, an analysis of commo rates was also conducted. A number of commodity rates were found relating specifically to the use of Western Doubles. However, when rates were published on 20,000 pound minimum weights or less, these rates were always much higher than the corresponding rates on 30,000 and 40,000 pound movements. If the rates would have been designed to take advantage of the flexibility of Western Doubles, it is believed that the 20,00 pound rates would have been equal or nearly equal to the 40,0 pound rates with only the minimum weight reduced in order to reflect the advantage of the smaller unit. For example, Item 11665 shows published rates on gambling devices from Chicago to Las Vegas or Reno, Nevada at $10.62 for 10,000 pounds, $10 for 20,000 pounds, and $7.78 for 30,000 pounds. The same item also shows published rates on athletic goods between two points at a rate of $6.97 on 20,000 pounds and $5.62 on 44,00 pounds. We believe that the 20,000 pound rate represents the approximate quantity that can be loaded in a Western Doubles while the 44,000 pound minimum would apply for a full trailer load in a long singles unit.

There are even specific overflow rules applying to Western Doubles in Item 410 of Rocky Mountain Tariff 225-A. This overflow rule actually penalizes a shipper using a Western

Doubles because if the entire shipment cannot be loaded in a single trailer not exceeding 29' in length, the remainder of the shipment must be tendered as a separate LTL shipment. Therefore, we believe that while rates are published that reflect the use of Western Doubles, we could find no specific instances of rates that reflected the advantages of Western Doubles use to shippers.

Most carriers said their "low cost" was reflected in the rate scales of the western bureaus. No such reflection was found. The only rate impact of Western Doubles in the west is perhaps a rate scale kept lower than might have otherwise been possible had Western Doubles not been in use. However, there are no facts to support this hypothesis.

Concerning the 20,000 lb. minimum weights in the class rates for the Rocky Mountain, Western, and Pacific Inland Tariff Bureaus, they are not significant to the extent that they reflect an operational advantage of Western Doubles because in the Rocky Mountain Tariff Bureau there are some tariffs that have 20,000 pound and 24,000 pound minimums, and others that have 20,000 pound and 40,000 pound minimums. The tariffs containing the 20,000 and 24,000 pound minimums are those that apply between East and West Coast points. However, the 24,000 pound TL rate has a sufficient cutback point that its charges are lower than those yielded by the 20,000 pound LTL rate at its minimum weight. Therefore, a shipment of 20,000 pounds in these tariffs would almost always move at the 24,000 pound

rate. This is true for all types of freights that have LTL ratings of class 55 or more and TL ratings of class 40 or less. At class 55, the cutback is marginal and sometimes the 20,000 pound rate applies. At class 50 LTL, the 20,000 pound rate does come into play, it is of such limited application that it truly does not reflect a marketing tool to take advantage of the characteristics of the Western Doubles.

Table IV-2, "Percentage of Motor Carrier Truckload Rate Incre by Bureau", shows the annual increases by bureau for TL rates and Table IV-3, "Percentage of Motor Carrier Less-Than-Truckl Rate Increases by Bureau", shows the increases applicable to LTL rates from July 1, 1977 through July 1, 1979. These tabl permit updating any of the rate information presented herein to more current levels, if desired. Maps showing the territo covered by each rate bureau appear in Appendix A-4. In this table, the Pacific Inland, Central States, and New England bureaus were omitted because their territories did not coincid with the corridors and distances being studied, i.e. it is impossible to travel 400 miles in the New England territory ar remain in the Boston to Miami Corridor.

One additional fact becomes clear from these tables. For the rate bureaus where use of Western Doubles predominate, rates are increasing at a faster percentage than for all bureaus shown. For TL, Western Motor and Rocky Mountain, rates have

TABLE IV-2

PERCENTAGE OF MOTOR CARRIER TRUCKLOAD RATE INCREASES BY BUREAU

(JULY 1, 1977 - JULY 1, 1979)

BUREAU	TARIFF ABBREVATION	YEAR 1977	1978	1979	CUMMULATIVE AVERAGE
Central & Southern	CSA	2	5.01	5	12.47 %
Eastern Central	ECMC	1.3	6.1	5.7+2	15.86
Middle Atlantic	MAC	2	6.5	5.5+1.4	16.21
Middlewest	MWB	1	6	5.5+1.99	15.20
Rocky Mountain	RMB	1	6	5.5+1.6	14.77
Southern Motor	SMC	2.25	5.5	5.9	14.24
Western Motor	WMT	-	10	9.25	20.18
AVERAGE		1.36	6.44	7.10	15.55 %

TABLE IV-3

PERCENTAGE OF MOTOR CARRIER LESS - THAN - TRUCKLOAD RATE INCREASES BY BUREAU

(JULY 1, 1977 - JULY 1, 1979)

BUREAU	TARIFF ABBREVATION	YEAR 1977	1978	1979	CUMMULATIVE AVERAGE
Central & Southern	CSA	2	7.61	5.5	15.80 %
Eastern Central	ECMC	1.3	7	5.7+2	16.85
Middle Atlantic	MAC	2	7.5	5.5+1.4	17.30
Middlewest	MWB	1	7	5.5+1.99	16.28
Rocky Mountain	RWB	1	7.5	5.5+1.6	16.39
Southern Motor	SMC	2.25	6.5	5.9	15.32
Western Motor	WMT	-	10	9.5	20.45
AVERAGE		1.36	7.59	7.21	16.92 %

increased an average of 17.46% compared to the average for all others of 14.80%. For LTL, Western and Rocky Mountain have increased an average of 18.42% compared to the average for all others of 16.31%. Clearly, over the past three years, the differential between East and West rate levels has grown wider. It is particularly interesting to note that in California where Western Doubles combinations represent better than one-third of all tractor-trailer combinations operated (and probably over 50% of the LTL operations), that rates for the governing intra-state bureau, Western Motor, have increased by 20.45% from 1977 to 1979 as compared to Middle Atlantic at 17.30% which is exclusively singles territory. Over the same period, all territories exclusive of Western Motor have increased 16.32%. Whatever economies there may be with Western Doubles are obviously totally overridden by other dis-economies.

2. Analysis of 20,000 Pound Minimum Rates Published In The West

A review of Appendix A-3 indicates that some of the tariff bureaus operating in areas where Western Doubles are used publish LTL rates on minimum weights as high as 20,000 pounds. Thus, it appeared that there was a possibility that these high minimum weights were published in order to take advantage of the unique load carrying capacity of Western Doubles as opposed to long single trailers.

To test this hypothesis, a 20,000 pound shipment was rated in

both corridor one and corridor eight to determine the impact of the 20,000 pound rate levels. In order to understand the significance of the 20,000 pound rate level, it is necessary to review the manner in which ratings and minimum weights are applied to both large LTL and small TL shipments. For example, a commodity that takes an LTL rating of class 100 wi usually move in TL quantities at a class much lower than clas 100, frequently class 50 or 55. To establish an objective relationship between the LTL and TL class ratings, a table of random numbers was used to research the freight classificatio and nine specific items were selected for analysis based upon a random number identification sequence. From the nine items selected for the LTL class 100 rates, there were eight separat TL class ratings and minimum weight combinations published. These are shown in Appendix Table A-6, "Effective Cost Per 10 Pounds For A 20,000 Pound Shipment Moving 400 Miles" under the column entitled "T/L Rating". Thus, for a series of commodities taking class 100 as an LTL rating, there were eight different TL ratings and minimum weights ranging from class 3 to class 77 1/4 with minimum weights ranging from 16,000 pound to 30,000 pounds. The same procedure was used to identify ra TL ratings that applied to articles subject to both LTL 77 1/2 and LTL 55.

Appendix Table A-6 demonstrates that while the 20,000 pound LTL rates published by the Western Tariff Bureaus are generall lower than the corresponding 5,000 and 10,000 LTL rates pub-

lished by the Eastern Tariff Bureaus, the actual effective transportation charges are lower in the east than in the west. Because it is usually the TL rates that apply to 20,000 shipments rather than the LTL rates, the following general statements can be made regarding this analysis.

- In corridor one the truckoad rate would apply in every instance.
- In corridor eight:
  - At class 100 LTL, the TL rates generally apply on 20,000 pound shipments.
  - At class 77 1/2, there is considerable variation with the TL rates applying about half the time and the LTL rates applying the remaining time.
  - At class 55, the LTL rates are generally lower than the TL rates in the west, but higher than the effective TL rates in the east.
- In all instances, at all class ratings, the cost of transporting a 20,000 pound shipment resulted in a lower effective cost per cwt. in eastern corridor one than in western corridor eight.

Thus, it can be seen that because of the inter-relationship between LTL and TL ratings, the tariff requirements for minimum weights which are generally published in the east with low closed-end minimums are published in the west with high minimums

that alternate with the applicable classification minimum weights. Thus, it is not possible to simply look at the published LTL rates and draw judgments as to the lowest transportation cost.

Based on this analysis, it does not appear that the 20,000 pound LTL rates published by the Western Tariff Bureaus are intended to attract traffic solely due to the use of the Western Doubles configuration because these rates do not apply to the shipments in question, and in fact, do not seem to have any application at all.

3. Rail Rates

Carload

Special problems are encountered when attempting to compare rail carload rates with motor carrier rates. Most rail carload traffic moves on commodity rates, where the majority of general commodity motor common carrier traffic moves on Class rates. A comparison of rail carload (CL) and truckload rates proves nothing other than the fact that rail CL class rates are considerably higher than TL class rates. For example:

Between	Class 35 Rail CL rate/cwt.	Class 35 TL rate/cwt.
Baltimore/Charlotte	$ 2.50	1.93
Boston/Bristol	3.63	2.69
Boston/Miami	5.23	4.64

Obviously, rail rates 26% higher than truck rates are not going to attract much business. Rail commodity rates are published to make rail competitive. These rates usually carry carload oriented minimum weights which are at or in excess of truckload maximum weights. Rail carload freight is not competitive with LTL freight and thus is not a relevant factor for the purpose of this study.

4. Trailer-on-Flatcar (TOFC)

Trailer-on-Flatcar (TOFC) or "piggyback" operations are conducted under various plans that offer several levels of rates and service. The TOFC Plan which is most comparable with motor carrier truckload service is designated as Plan II 1/2. Under Plan II 1/2 rates, rail service is provided from ramp to ramp in railroad trailers. The shipper generally provides trucking (drayage) to and from the origin and destination ramps. Plan II 1/2 piggyback rates apply on "freight -all-kinds" (FAK) which means the commodity transported is unimportant in the rate structure.

Hundreds of Plan II½ rates which were in effect on July 1, 1977 were researched. The corridor averages appear on Table IV-4, "Trailer-On-Flatcar Plan II½ Charges". The rates are ramp to ramp charges not including drayage. A flat rate of $100 for drayage was added to the TOFC charge to make these charges comparable to the motor carrier class 35 truckload rates.

Table IV-4A, "Revenue Per Ton-Mile, TOFC Compared To Truckload", shows the average total charges and revenue per ton-mile based on a 30,000 pound shipment for TOFC, and TL service in both the East and the West.

The Western TOFC rates shown are 5.3% higher than in the East and the TL rates are 30.6% higher in the West.

The Freight Forwarder LTL rates were not compared to the motor carrier LTL rates because, as previously mentioned, these two modes compete vigorously and strive for parity in their rate structures.

The large differential in TL rates between East and West may be caused by the significant truckload traffic imbalan The East-West flow of traffic is predominately westbound. An analysis of the trailer-on-flatcar and truckload revenu per ton-mile reveals the following facts. TOFC service in both the West and the East is considerably less expensive than comparable motor carrier truckload service in both regions. The service which the shipper may expect from the less expensive TOFC service is examined in the followir section.

A comparison of TOFC-LTL and Truck LTL rates was not included because TOFC-LTL service is offered only by Freight Forwarders. Historically, the Freight Forwarders and truckers have published identical LTL rates on the

TABLE IV-4

TRAILER-ON-FLAT CAR PLAN II½ CHARGES

AVERAGE OF THE THREE EASTERN CORRIDORS (1, 2 and 3)	MILEAGE	CHARGES	R.P.T.M.
Lane A (0-500)	424	$ 467	.073
Lane B (500-900)	704	607	.057
Lane C (900-)	1149	857	.050
AVERAGE	759	$ 644	.057

AVERAGE OF THE FIVE WESTERN CORRIDORS (4, 5, 6, 7 and 8)			
Lane A (0-500)	352	$ 420	.080
Lane B (500-900)	731	798	.073
Lane C (900-)	1466	1075	.049
AVERAGE	850	$ 764	.060

* Revenue Per Ton-Mile

TABLE IV-4-A

ANALYSIS OF REVENUE PER TON-MILE* T.O.F.C. COMPARED TO TRUCKLOAD

AVERAGE EASTERN CORRIDOR (1, 2 and 3)	TRAILER-ON-FLATCAR MILEAGE	REVENUE	R.P.T.M.*	MOTOR CARRIER TRUCKLOAD MILEAGE	REVENUE	R.P.T.M.*	PERCENTAGE OF TRUCKLOAD R.P.T.M. OVER T.O.F.C.
Lane A (0-500)	424	$ 467	.073	400	$ 555	.093	27.4%
Lane B (500-900)	704	607	.057	800	842	.070	22.8
Lane C (900-)	1149	857	.050	1500	1527	.068	36.0
AVERAGE	759	$ 644	.057	900	$ 974	.072	26.3%
AVERAGE WESTERN CORRIDOR 4, 5, 6, 7 and 8							
Lane A (0-500)	352	$ 420	.080	400	$ 752	.125	56.3%
Lane B (500-900)	731	798	.073	800	1139	.095	30.1
Lane C (900-)	1466	1075	.049	1500	1913	.085	73.5
AVERAGE	850	$ 764	.060	900	$1268	.094	56.7%
PERCENT DIFFERENCE WEST OVER EAST			5.3%			30.6%	

* Revenue per Ton-Mile based on 30,000 pounds.

same commodities between the same points or geographic areas.*

C. Service

1. Motor Carrier Advertised Service

Carriers publish "advertised" point to point transit times, in days, for cities served within their authority. Table IV-5 "Advertised Eastern Common Carrier Less-Than-Truckload Transit Times" displays the results of the research for corridors 1, 2, and 3. Similar information for the five Western Doubles corridors (4,5,6,7 and 8) is displayed in Table IV-6 Advertised Western Common Carrier Less-Than-Truck-Load Transit Times"

Tables IV-5 and IV-6 are constructed as follows: The average miles traveled per day is computed by dividing the average length of haul in the corridor by the average transit time. For example, in corridor 1, the average mileage for city pairs which are 0-500 miles apart, designated lane A, was 399

* Rocky Mountain Motor Tariff Bureau Tariffs No. 225A and 226A Sections 2 and 3, and Freight Forwarders Tariff Bureau, Inc. Tariff No. 557. For all practical purposes, the rates are maintained at a parity in these competing tariffs.

TABLE IV-5

ADVERTISED EASTERN COMMON CARRIER
LESS-THAN-TRUCKLOAD
TRANSIT TIMES

EASTERN - "LONG SINGLES" CORRIDORS	MILEAGE	DAYS IN TRANSIT	AVERAGE MI TRAVELED PI
CORRIDOR 1: Boston MA - Miami FL			
Lane A (0-500	399	2.6	153
Lane B (500-900)	721	3.4	212
Lane C (900-)	1077	4.2	256
Weighted Average	732	3.65	201
CORRIDOR 2 : St. Paul MN - Boston MA			
Lane A (0-500)	359	2.3	156
Lane B (500-900)	762	3.2	238
Lane C (900-)	1124	4.4	255
Weighted Average	748	3.66	204
CORRIDOR 3 : St. Paul MN - Miami FL			
Lane A (0-500)	439	2.5	176
Lane B (500-900)	735	3.3	229
Lane C (900-)	1121	4.2	266
Weighted Average	765	3.59	213
AVERAGE LONG SINGLES CORRIDOR:			
Lane A (0-500)	399	2.5	160
Lane B (500-900)	739	3.3	224
Lane C (900-)	1107	4.3	257
Weighted Average	748	3.65	205

TABLE IV-6

ADVERTISED WESTERN COMMON CARRIER
LESS-THAN-TRUCKLOAD
TRANSIT TIMES

WESTERN-"WESTERN DOUBLES" CORRIDORS	MILEAGE	DAYS IN TRANSIT	AVERAGE MILES TRAVELED PER DAY
CORRIDOR 4 :			
Chicago IL - Dallas TX			
Lane A (0-500)	495	2.5	198
Lane B (500-900)	717	2.7	266
Lane C (900-)	1024	3.3	310
Weighted Average	745	2.93	254
CORRIDOR 5:			
St. Paul MN - Seattle WA			
Lane A (0-500)	315	1.3	242
Lane B (500-900)	688	2.0	344
Lane C (900-)	1295	2.9	447
Weighted Average	766	2.41	318
CORRIDOR 6:			
Chicago IL - Los Angeles CA			
Lane A (0-500)	346	1.9	182
Lane B (500-900)	667	2.5	267
Lane C (900-)	1404	3.9	360
Weighted Average	806	3.23	250
CORRIDOR 7 :			
San Francisco CA - Dallas TX			
Lane A (0-500)	366	1.7	215
Lane B (500-900)	720	2.1	343
Lane C (900-)	1559	4.1	380
Weighted Average	882	2.60	339

TABLE IV-6

ADVERTISED WESTERN COMMON CARRIER
LESS-THAN-TRUCKLOAD
TRANSIT TIMES

WESTERN-"WESTERN DOUBLES" CORRIDOR	MILEAGE	DAYS IN TRANSIT	AVERAGE MILE TRAVELED PER
CORRIDOR 8 :			
Seattle WA - Los Angeles CA			
Lane A (0-500)	297	1.4	212
Lane B (500-900)	722	2.3	314
Lane C (900-)	1107	2.6	426
Weighted Average	709	2.33	304
AVERAGE WESTERN DOUBLES CORRIDOR:			
Lane A (0-500)	364	1.8	202
Lane B (500-900)	703	2.3	306
Lane C (900-)	1278	3.4	376
Weighted Average	782	2.82	277

miles and days in transit averaged 2.6 days.* By dividing mileage by days in transit, the average miles traveled per day derived is 153 miles.

The average miles traveled per day for the three Eastern singles corridors and five Western Doubles corridors are 205 and 277 miles respectively. The average Eastern transit time is 3.65 days as compared to the average Western transit time of 2.82 days as shown in Tables IV-5 and IV-6. Thus, in the West, the average distances are greater while the average transit time is less. Measured on a miles traveled per day index, this obviously points to a transit time advantage in the Western corridors.

The miles traveled each day in the West is 35% greater than comparable shipments in the East. (277 miles ÷ 205 miles = 35.1%). The percentage of greater mileage traveled per day in the West than the East by mileage group is as follows:

Lane A (0-500 miles)	26.3%
Lane B (500-900)	36.6%
Lane C (900-)	46.3%

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* Base advertised dates for Yellow Freight, Garrett, Roadway, McLean, and Eastern using the "Household Goods Carriers Mileage Guide" for mileage data.

Advertised transit times for truckload shipments are not published in common carriers service bulletins, but the carriers do state that truckload service is generally one day less than LTL in both the East and West. This is true largely because there should be no cross dock handling on truckload shipments, which should improve service.

2. Motor Carrier Service: Actual vs Advertised

A comparison was made of the common carriers advertised transit times with actual data from the "FACTS" file.* The "July (1979) Transit Report" (see Appendix Table A-5) for a national retail chain headquartered on the East Coast" was used for actual data. The name of the chain as well as the carriers involved have been removed from the report. This company receives shipments inbound from various points ranging from Maine to Miami and as far west as St. Paul. These traffic movements coincide with the study corridors I and II.

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* FACTS (Freight Audit and Computerized Transportation Statistics), a proprietary freight data management system owned by Traffic and Distribution Services, Inc.

The actual service received within corridors I and II is as follows:

	Mileage	Days in Transit	Average Miles Traveled Per Day
Lane A (0-500)	394	2.7	146
Lane B (500-900)	635	4.1	155
Lane C (900-)	1068	5.3	212
Weighted Average	699	4.45	157

The average advertised for the two study corridors taken from Table IV-6 is as follows:

Lane A (0-500)	379	2.5	152
Lane B (500-900)	742	3.3	225
Lane C (900-)	1101	4.3	256
Weighted Average	741	3.66	202

An analysis of this data shows that the actual service received by this firm is not up to par with the advertised service of carriers operating in this area. The actual inbound shipments moved an average of 699 miles and took 4.45 days from origin to destination. This compares to an advertised average of 741 miles and 3.66 days. When analyzing the average miles traveled per day, the 157 miles per day ($\frac{699 \text{ miles}}{4.45 \text{ days}}$) actual is approximately 78% of the advertised 202 miles per day ($\frac{741 \text{ miles}}{3.66 \text{ days}}$). No similar comparable data was available for Western Doubles corridors. Service data obtained from a carrier for this analysis proved to be too subjective to provide any meaningful comparison.

3. Trailer-on-Flatcar Service

The piggyback transit times were researched in both the East and West. The major railroads publish their intermodal service schedules in "The Official Railway Guide", which was used as the reference source.

The Plan II½ service provided by the railroads is ramp to ramp and the transit times are outlined in the following tabulation.

Railroad T.O.F.C. Transit Times
Three Eastern Corridors (1,2, and 3)

Average Eastern Corridor	Mileage	Days in Transit	Average Miles Traveled Per Day
Lane A (0-500)	387	1.8	215
Lane B (500-900)	696	2.6	268
Lane C (900-)	953	3.4	280
Weighted Average	679	2.82	241

Railroad T.O.F.C. Transit Times
Five Western Corridors (4,5,6,7, and 8)

Average Western Corridor	Mileage	Days in Transit	Average Miles Traveled Per Day
Lane A (0-500)	256	1.3	197
Lane B (500-900)	700	1.9	368
Lane C (900-)	1328	2.9	458
Weighted Average	761	2.42	314

It is apparent from these tables that the average miles traveled by rail per day is approximately 30% greater in the West than in the East (314 ÷ 241 = 30.3%).

To properly compare the TOFC transit times to those of the motor carrier truckload service, drayage time (pickup and delivery) must be taken into account. Depending on the delivery of the trailer and/or arrival of the flat car, drayage should account for an additional one-half to a whole day, added to the published rail transit times.

If motor carrier truckload transit time is one day less than LTL, then the average days in transit for a shipment traveling 748 miles in the East (Table IV-6) should be approximately 2.7 days. If drayage adds an additional day to the TOFC transit time, then piggyback service in the East will be 3.8 days for a move of 679 miles. It is assumed that the shipping public utilizing the slower TOFC service is doing so because of the rate advantage of TOFC.

TOFC LTL service is the same as TOFC TL service with the possible exception that delivery to a destination outside the commercial zone might require an additional day to be interlined.

V. RATE RELATIONSHIPS (TASK 7)

A. Introduction

The objective of this task is to isolate the impact of Western Doubles on rate levels from other factors such as regional cost differences, load factors and individual carrier cost differentials. In order to separate out regional differences a subjective corridor evaluation procedure was devised. This evaluation indicated that although there were differences in cost by corridors, these differences did not correlate with the rate differences for these corridors. Stated another way, regional costs may correlate with corridor rates but they do not correlate with the usage of Western Doubles.

The analysis of carrier load factors revealed that carriers who primarily operate 45 foot single trailers load these long trailers 10% more efficently than Western Doubles carriers. The cost differentials for Western Doubles versus singles carriers show higher line-haul costs for Doubles users on the average compared to singles users. Rate relationships are difficult to find which reflect the of the use of Western Doubles. The exact opposite appears to be the case, where Western Doubles are used, rates are higher.

The following sections expand on these summarized findings.

B. Regional Differences Affecting Rate Levels (Task 7A)

In order to make a comparison in the level of freight rates between Western Doubles Corridors and eastern

singles corridors, all other characteristic differences such as climate, topography, cost levels and taxes, must be indexed. In order to accomplish this, a subjective evaluation matrix was developed. In this matrix eight factors have been identified which may influence rates on freight hauled in different corridors. Each of the factors were scored on a scale of 1 to 10. The lowest score indicates an influence favorable to low freight rates and the highest score indicates a factor which might cause higher freight rates. The purpose of the scoring is to obtain a subjective measure of the factors which, when combined, could explain the potential difference in actual rate levels published in each corridor.

Factor No.	Factor	Scaling Based On
1	Competition	Number of competing trucking firms serving the corridor (one = heavy competition) (ten = almost no competition)
2	Traffic Volume	Total volume of freight moving in the corridor (one = heavy traffic volume) (ten = light traffic volume)
3	Topography	Average speed and fuel consumed (one = flat, efficient terrain) (ten = heavy grades, poor operating conditions)
4	Backhaul	Relative ease in obtaining backhaul traffic (one = backhauls usually available) (ten = backhauls difficult to obtain)

Factor No.	Factor	Scaling Based On
5	Climate	Temperature extremes and snow and ice problems (one = "low cost" conditions) (ten = "high cost" conditions)
6	Taxes	State taxes for corridor (one = low cost) (ten = high cost)
7	Wage Levels	Existing Wage levels by corridor (one = lower wages applicable) (ten = higher wages applicable)
8	Fuel Costs	Existing fuel costs by corridor (one = lowest cost per gallon) (ten = highest cost per gallon)

For instance, if a corridor were to cross mountainous terrain with heavy grades, have harsh climatic conditions with high fuel prices and high labor rates, not much backhaul and not many carriers competing for the traffic, then it may be expected that freight rates in the corridor would be relatively high no matter what kind of equipment, doubles or singles, were in use. On the other hand, if a corridor were to be in the coastal plains enjoying mild climatic conditions with cheap fuel and lower labor rates, attractive backhaul loads and many competing carriers, it may be expected that the freight rates in the corridor would be relatively low, regardless of the equipment used.

The subjective evaluation matrix and a description of the study

were sent to a number of knowledgeable distribution people for their evaluations. These included executives from the carriers, private fleet operators, shippers and consultants. The numeric results of their subjectives evaluations were averaged and the findings appear in Table V-1, "Subjective Evaluation Matrix For Corridors" which provides a vehicle for making an objective comparison of these subjective cost elements.

The following table combines the corridor subjective cost difference evaluation (Tables V-1) with the corridor rate level ranking from Task 3.

Corridor No.	Name	Subjective Total Scores	Evaluation Rank	Actual Freight Rate Total Scores	Rate Rank
1	Boston-Miami	16	1	13	1
2	St. Paul-Boston	29	2	42	4
3	St. Paul-Miami	40	5	35	2
4	Chicago-Dallas	32	3	39	3
5	St. Paul-Seattle	46	8	74	7
6	Chicago-Los Angeles	39	4	79	8
7	San Francisco-Dallas	42	7	73	6
8	Seattle-Los Angeles	41	6	46.5	5

Although there are exceptions, the table shows that there is a relationship between subjective regional cost related differences and the level of rates.

What this comparison also reveals is that there are a number of factors affecting rate levels in each corridor which are more of a driving force than the mere existence of Western Doubles.

C. Load Factors

Table V-2 "Motor Carrier Statistics for the Nations Largest

TABLE V-1

SUBJECTIVE EVALUATION MATRIX FOR CORRIDORS
To Rank Cost Factors as to the V from Low(1)
to High (10) Degree of Impact on Rates

Corridor No.	Name	Competition	Volume of Traffic	Topography	Backhaul	Climate	Taxes	Wage Levels	Fuel Costs	Total Score	Rank
1	Boston-Miami	1	1	1	2	3	1	1	6	16	1
2	St. Paul-Boston	3	2	2	1	7	2	4	8	29	2
3	St. Paul-Miami	5	3	8	5	6	3	3	7	40	5
4	Chicago-Dallas	3	4	3	4	4	4	5	5	32	3
5	St. Paul-Seattle	8	8	6	7	8	5	2	2	46	8
6	Chicago-Los Angeles	2	4	5	8	5	6	6	3	39	4
7	San Francisco Dallas	7	7	4	6	2	7	8	1	42	7
8	Seattle-Los Angeles	5	6	7	3	1	8	7	4	41	6

Carriers Whose Trailer Fleet Is Comprised Less Than 50% Western Doubles" and Table V-3 "Motor Carrier Statistics For The Nations Largest Carriers Whose Trailer Fleet Is Comprised More Than 50% Western Doubles" presents a number of important statistics for the nations largest motor carriers. The tables were derived from American Trucking Association, 1978-1977 Financial & Operating Statistics and they show data for the 34 largest carriers (those with gross revenues greater than $100,000,000 per year) who haul 45% of the nations regulated common.carrier freight traffic and gross 55% of the revenues. Before developing the load factor argument, the table is worth reviewing for the insight into differences between doubles and singles users.

The following facts are apparent:

- The line haul costs per mile are considerably higher for common carriers whose trailer fleets are principally Double Bottoms (79.6¢ per mile compared to 72.2¢ per mile for Singles)

- The average length of haul is approximately 15% greater for carriers using mostly Western Doubles than carriers operating mostly singles (817 miles versus 714 miles = 14.4%).

- The average trailer configuration length with carriers using Doubles is 52.1 feet while for common carriers who predominately use Singles it is 46.2 feet.

- The "Western Doubles" carriers, on the average, load 29,800 pounds per two trailers compared to 29,200 pounds for "Long Singles" carriers.

- The maximum load capacity is 12.8% greater for the average Western Doubles trailer configuration than for the average singles configuration for freight at 12.5 pounds per cubic feet or less. (41690 ÷ 36960 = 12.8%)

- Load factor may be defined as the percent a trailer is loaded compared to the maximum load capacity. The load factor is 10.5 percent greater with "Long Singles" carriers than "Western Doubles" carriers. (79.0% compared to 71.5%)

  The load factors shown in Tables V-2 and V-3 were derived by dividing the loads hauled by the capacity available. These are average values representing the whole fleet and corrected for the number of long singles versus short doubles trailers.

  The average load factor for singles operation is 79.0% while for operators predominately using doubles the load factor is 71.5% (from Tables V-2 and V-3). Further analysis of motor carrier load factors revaled an insignificant difference between the truckload and the average load factors. As displayed in Table V-2A, "Truckload Load Factors For The Nation's Largest Carriers Whose Trailer Fleet Is Comprised Of Less Than 50% Western Doubles" the truckload load factor for singles operations is 79.5% compared to the aggregated average of 79.0%. Table V-3A,

"Truck Load Factors For The Nation's Largest Carriers Whose Trailer Fleet Is Comprised Of More Than 50% Western Doubles" reveals an average truckload factor of 72.2%. The difference between TL and the aggregated average for Western Doubles carriers was slightly greater than single carriers. (72.2% versus 71.5%)

It appears that a typical Western Doubles trailer is being dispatched more often without a full load than the singles trailer. This may occur because of the greater likelihood of peddling directly from them so the load is more likely tailored to the routes and therefore tends to be smaller than the singles load which is bound for a terminal. However, the average load dispatched in Western Doubles is 2% heavier than the average load for singles trailers.

D. Cost Differentials

The line haul costs per mile shown in Tables V-2 and V-3 show that singles operate for 72.2 cents per mile while Doubles cost 79.6 cents per mile. Since a Doubles can haul 20% more cubage, where freight cubes out, this 10% increase in cost can be justified. At 73,280 pounds gross weight limit, this is at a freight density of 13 pounds per cubic foot.* At 80,000 pounds gross weight limit,

* Mergel, J.J. "Analysis of Truck Payloads Under Various Limits of Size, Weight and Configurations." TSC/USDOT, Cambridge, 1979, pg. 41.

TABLE V-2

MOTOR CARRIER STATISTICS FOR THE NATION'S LARGEST CARRIERS WHOSE** TRAILER FLEET IS COMPRISED OF LESS THAN 50% WESTERN DOUBLES

Common Carrier	Line Haul* Costs	Total* Vehicle Mi.	Line-haul cost/mile	Ave Lng. of Haul	No. of Dispatches	Tons of* Rev. Frt	Percent of LTL Freight	W. D.	Eff.1 Tr. LLng.	Load Ave.	Max. Ld 2 Capacity	Load 3 Factor
American Frt System	$ 54,982	77,532	70.9¢	637	121,700	1,618	47.5	40.4%	48.6	26600	38880	68.4
Arkansas Best Frt	61,305	86,397	71.0	784	110,200	1,722	28.6	16.6	46.5	31200	37200	83.9
Associated Trucking	40,688	48,291	84.3	221	218,511	2,468	35.3	24.0	47.2	22600	37760	59.9
Bowman Transportation	53,174	88,429	60.1	557	158,759	2,161	21.9	0	45	27200	36000	75.6
Branch Motor	56,195	68,646	81.9	406	169,079	2,043	37.1	0	45	24200	36000	67.2
Carolina Frt Carriers	79,444	108,502	73.2	645	168,220	2,305	34.0	0	45	27400	36000	76.1
Central Freight	37,462	60,508	61.9	166	364,506	3,491	41.0	5	45.5	19200	36400	52.7
Gateway	70,049	87,559	80.0	517	169,360	2,294	25.5	20.4	46.8	27000	37440	72.1
Jones Motor	48,056	57,870	83.0	468	123,654	1,764	33.0	0	45	28600	36000	79.4
Leeway Motor	74,557	105,086	70.9	1224	85,855	1,338	40.2	29.4	47.7	31200	38160	81.8
Mason & Dixon	75,775	98,277	77.1	565	173,942	2,579	24.8	0	45	29600	36000	82.2
McLean	168,843	244,659	69.0	780	313,665	4,516	39.6	25.0	47.3	28800	37840	76.1
Navajo	81,601	108,738	75.0.	1138	95,552	1,435	18.1	16.6	46.5	30000	37200	80.6
Overnite	66,998	136,534	49.1	412	331,393	3,705	33.9	0	45	22400	36000	62.2
Pilot	51,938	79,465	65.4	695	114,338	1,609	35.3	0	45	28200	36000	78.3
Preston	40,986	51,680	79.3	293	176,382	2,195	40.5	6.7	45.6	24800	36480	68.0
Roadway	319,429	451,866	70.7	913	494,924	6,961	55.9	0	45	28200	36000	78.3
Ryder	229,216	279,647	82.0	687	407,055	6,036	21.4	0	45	29600	36000	82.2
Smith's	85,480	125,836	67.9	661	190,372	2,693	38.2	13.7	46.2	28200	36960	76.3
Spector	133,960	172,491	77.7	709	243,288	3,531	26.3	0	45	29000	36000	80.6
Time - DC	86,360	112,424	76.8	1330	84,529	1,329	26.7	48.6	49.4	31400	39520	79.5
Transcon	104,895	152,569	68.8	1624	93,946	1,582	39.1	33	48.0	33600	38400	87.5
Wilson	63,063	82,190	76.7	598	137,441	2,004	34.7	0	45	29200	36000	81.1
Yellow	293,687	407,113	72.1	1105	368,428	5,711	37.6	31.1	47.8	31000	38240	81.1
AVERAGE	$ 99,089	137,180	72.2¢	714	192,129	2,810	34.0%	12.9	46.2	29200	36960	79.0%

1) The effective trailer - configuration length is computed by multiplying the Western Double percentage times 54 feet and adding the product to the long single percentage times 45 feet (i.e., 54 X .129 + 45 X .871 = 46.2 feet).

2) The maximum load capacity is computed by multiplying 8 feet X 8 feet X 1 foot = cubic feet X the average density of 12.5 cubic feet = 800 per foot X trailer length 52.1 = 41,680 pounds.

3) The load factor is computed by dividing the average load of 29,800 by maximum load 41,680 = 71.5%.

* In Thousands

** From the 1978-1977 American Trucking Associations, Financial and Operating Statistics

TABLE V-2A

TRUCKLOAD LOAD FACTORS FOR THE NATI 3 LARGEST CARRIERS WHOSE TRAILER FLEET IS COMPRISED OF LESS THAN 50% WESTERN DOUBLES

Common Carrier	TL Load Ave.	Max. Ld. Capacity[1]	TL Load Factor[2]
American Frt System	28701*	38880*	73.8
Arkansas Best Frt	30806	37200	82.8
Associated Trucking	28882	37750	76.5
Bowman Transportation	32606	36000	90.5
Branch Motor	29095	36000	80.8
Carolina Frt Carriers	29392	36000	81.6
Central Freight	30345	36400	83.4
Gateway	29489	37440	78.8
Jones Motor	31568	36000	87.7
Leeway Motor	29906	38160	78.4
Mason & Dixon	31171	36000	86.6
McLean	28963	37840	76.5
Navajo	34700	37200	93.3
Overnite	27379	36000	76.0
Pilot	27709	36000	77.0
Preston	25165	36480	69.0
Roadway	24582	36000	68.3
Ryder	30026	36000	83.4
Smith's	28273	36960	76.5
Spector	31937	36000	88.7
Time - DC	30943	39520	78.3
Transcon	23144	38400	60.3
Wilson	31003	36000	86.1
Yellow	29639	38240	77.5
AVERAGE	29393	36960	79.5%

* In Thousands

TABLE V-3

MOTOR CARRIER STATISTICS FOR THE NATION'S LARGEST CARRIERS WHOSE ** TRAILER FLEET IS COMPRISED OF MORE THAN 50% WESTERN DOUBLES

Common Carrier	Line Haul* Costs	Total* Vehicle Mi.	Line-haul cost/mile	Ave Lng. of Haul	No. of Dispatches	Tons of* Rev. Frt.	Percent of LTL Freight	W. D. %	Eff.1 Tr. Lng.	Load Ave.	Max. Ld 2 Capacity	Load 3 Factor
Consolidated Freightways	303190	409725	74.0¢	1428	286922	4772	55.8	77.6	52	33200	41600	79.8
Delta Lines	26466	31188	84.9	291	107175	1452	70.6	100	54	27000	43200	62.5
ETMF	105940	143294	73.9	1097	130624	2022	31.6	60.4	50.4	31000	40320	76.9
Garrett	46569	60087	77.5	695	86456	1338	47.5	96.9	53.7	31000	42960	72.2
IML	79240	96720	81.9	1327	72886	1112	41.3	76.0	51.8	30600	41440	73.8
ICX	48723	64325	75.7	1142	56327	913	34.5	55.5	50.0	32400	40000	81.0
Interstate	99249	131217	75.6	422	310941	3667	19.0	78.9	52.1	23600	41680	56.6
ONC	33441	39504	84.7	648	60963	1005	56.0	100	54	33000	43200	76.4
PIE	167016	198710	84.1	628	316417	4946	15.9	81.5	52.3	31200	41840	74.6
Red Ball	36985	48240	76.7	496	97258	1519	41.5	61.0	50.5	31200	40400	77.2
Average	$ 97382	122301	79.6¢	817	149695	2275	41.4%	78.8	52.1	29800	41680	71.5%

1) The effective trailer - configuration length is computed by multiplying the Western Double percentage times 54 feet and adding the product to the long single percentage times 45 feet (ie: 54 X .129 + 45 X .871 = 46.2 feet)

2) The maximum load capacity is computed by multiplying 8 feet X 8 feet X 1 Foot = cubic feet X the average density of 12.5 cubic feet = 800 per foot X trailer length 52.1 = 41,680 pounds.

3) The load factor is computed by dividing the average load of 29,800 by maximum load 41,680 = 71.5%

* In Thousands

** From the 1978-1977 American Trucking Associations, Financial + Operating Statistics

TABLE V-3A

TRUCK LOAD FACTORS FOR THE NATION'S LARGEST CARRIERS WHOSE TRAILER FLEET IS COMPRISED OF MORE THAN 50% WESTERN DOUBLES

COMMON CARRIER	TL Load Ave.	Max. Ld. Capacity[1]	TL Load Factor[2]
Consolidated Freightways	23824*	41600*	57.3
Delta Lines	25528	43200	59.1
ETMF	30572	40320	75.8
Garrett	32061	42960	74.6
IML	30765	41440	74.2
ICX	29082	40000	72.7
Interstate	31945	41680	76.6
ONC	27593	43200	63.9
PIE	39467	41840	94.3
Red Ball	30072	40400	74.4
AVERAGE	30091	41680	72.2%

1) The maximum load capacity is computed by multiplying 8 feet X 8 feet X 1 foot = cubic feet X the average density of 12.5 cubic feet = 800 per foot X trailer length 52.1 = 41,680 pounds.

2) The load factor is computed by divided load of 29,800 by maximum load 41,680 = 71.5%.

* In Thousands

** From the 1978-1977 American Trucking Association's Financial and Operating Statistics

it moves to 15 pounds per cubic feet. But where freight weighs out, then a singles starts to become more efficient because of the lower tare weight.

Another cost element where Western Doubles have a distinct advantage over long singles is platform costs.

An analysis of Table V-5 revealed the following facts relative to platform costs:

- For the group of ten carriers whose trailer fleet consists of 50% or greater Western Doubles: the total platform costs were $318,100,000. If this figure is divided by the total tons of revenue freight transported, (4.55 million pounds), the platform cost per hundred pounds is $0.70 per CWT.

- The total platform costs for the carriers whose trailer fleet is primarily long singles was $905,400,000. These carriers transported 5.62 million pounds during 1978. The platform cost per hundred pounds was $1.61 for this group.

- The cost per hundred weight is approximately 130% greater for carriers operating singles compared to Western Doubles.

These statistics tend to substantiate conventional wisdom in that Western Doubles are often dispatched directly to destination, therefore avoiding over the dock platform

handling. Freight handled by carriers operating long singles trailers must "break" their trailers at break bulk terminals. It can be expected that their platform expenses would be greater than a Western Doubles carrier.

Of course this would be a superficial view unless one looked at the bottom line for these carrier groups. Operating ratios offer a good look at the bottom line, and if the Western Doubles carriers are significantly more efficient overall, it should show there. Table III-1, "Operating Ratios and Percentage of LTL Freight of the Nation's Largest Common Carriers Whose Trailer Fleet is Comprised Less Than 50% Western Doubles" and Table III-2, "Operating Ratios and Percentage of LTL Freight of the Nation's Largest Common Carriers Whose Trailer Fleet is Comprised More Than 50% Western Doubles" show that the difference between these groups is 1.3% in operating ratios. Because the Consolidated Freightways operating ratio is significantly below the other carriers, excluding it from Table III-2 brings the Western Doubles group into even much closer agreement with the Less than 50% Western Doubles, 94.8 versus 94.3 oeprating ratios respectively. Those carriers with a high percentage of Western Doubles have higher line-haul and other costs which override their savings in platform handling.

Another costing analysis of Doubles versus Singles utilized P.U.C. data from California. Both fixed and running costs of a Western Doubles rig versus a single 40' tractor-trailer combination were used from the rental and operating costs data of the Public Utilities Commission of the State of California. The cost data examined included labor costs as well as equipment costs. Although the trailers for a Western Doubles cost more to rent or buy, the tractor more than makes up for this difference. But, added to the Western Doubles tractor and trailer costs are the costs associated with the converter gear. Exhibits V-1, V-2, and V-3, "Table I-A & Table I-B Development Of Equipment Fixed And Running Costs Per Statute Mile As Of April 1, 1978", are derived from the aforementioned cost study performed by the P.U.C. of California. By pulling data from these exhibits and utilizing mileage data from an earlier study by the P.U.C., a tabulation was prepared.

From the following Table V-4, "Annual Costs For Doubles versus Singles Tractor Trailer Operations From California P.U.C. Data", it can be seen that doubles rigs consistently cost more to operate (6.4%) than the singles rigs.

A substantive portion of this difference is driver costs, and since this P.U.C. data is older, more recent contracts were analyzed. A June, 1979 contract analysis* shows that overall, doubles cost 5% more than singles in dollars per

* In-hours document of a major carrier with doubles and singles.

Exhibit V-1

TABLE I-A & TABLE I-B
DEVELOPMENT OF EQUIPMENT FIXED AND RUNNING COSTS PER STATUTE MILE
AS OF APRIL 1, 1978

Line No.	Item	Trucks - Gasoline-Powered: Van 2 Axles Cap. 2,500 Lbs.	Van 2 Axles Cap. 4,500 Lbs.	Van 2 Axles Cap. 10,500 Lbs.	Insulated Van 2 Axles Cap. 10,500 Lbs.	Flatbed 3 Axles	Tractors Gasoline-Powered: L.T.L. 2 Axles	T.L. 2 Axles	T.L. 3 Axles	Tractors Diesel Powered: T.L. 2 Axles	T.L. 3 Axles	Converter Gear (Dolly)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	Investment											
2	Historical Cost	$4072	$5148	$8762	$10871	$18877	$8675	$12269	$12940	$22836	$28545	$1614
3	Salvage Value	407	515	876	1087	1888	868	1227	1294	2284	2855	161
4	Service Value	$3665	$4633	$7886	$ 9784	$16989	$7807	$11042	$11646	$20552	$25690	$1453
5	Service Life-Years	6	6	8	8	8	8	8	8	10	10	12
6	Annual Depreciation Exp.	$ 611	$ 772	$ 986	$ 1223	$ 2124	$ 976	$ 1380	$ 1456	$ 2055	$ 2569	$ 121
7	Annual Fixed Expenses											
8	Taxes and Licenses											
9	Veh. Reg. - State	$ 11	$ 11	$ 11	$ 11	$ 11	$ 11	$ 11	$ 11	$ 11	$ 11	$ 11
10	Veh. Wgt. Fee-State	15	44	129	165	329	109	143	284	188	383	17
11	Veh. Lic. Fee-State	48	59	84	104	184	81	110	119	176	225	14
12	Dep. Use Tax-Federal	-	-	-	-	-	90	150	210	180	210	-
13	Total (L.9 to L.12 incl.)	$ 74	$ 114	$ 224	$ 280	$ 524	$ 291	$ 414	$ 624	$ 555	$ 829	$ 42
14	Total Annual Dep. and Fixed Exps. (L. 6 + L.13)	$ 685	$ 886	$1210	$ 1503	$ 2648	$1267	$ 1794	$ 2080	$ 2610	$ 3398	$ 163
15	Running Costs Per Mile											
16	Fuel											
17	Cost per Gallon	$0.552	$0.552	$0.552	$0.552	$0.552	$0.552	$0.552	$0.552	$0.515	$0.515	-
18	Miles per Gallon	15.0	8.5	7.2	6.7	5.2	4.9	4.5	4.2	5.1	5.1	-
19	Cost per Mile	$0.037	$0.065	$0.077	$0.082	$0.106	$0.113	$0.123	$0.131	$0.101	$0.101	-
20	Oil	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	-
21	Tires	$0.005	$0.006	$0.007	$0.008	$0.008	$0.008	$0.008	$0.010	$0.010	$0.012	$0.005
22	Maintenance & Repairs	0.097	0.109	0.131	0.138	0.134	0.125	0.134	0.137	0.137	0.142	0.012
23	Tot. Dir. CPM (L. 19 - 22 incl.)	$0.141	$0.182	$0.217	$0.230	$0.250	$0.248	$0.268	$0.281	$0.251	$0.258	$0.017
24	Tot. Running CPM @ 100 O.R.											
25	A. MONTH-MONTH											
26	a. Wage Cost Offset	$0.164	$0.212	$0.253	$0.268	$0.292	$0.290	$0.313	$0.327	$0.292	$0.301	
27	b. Wage Offset	0.160	0.207	0.247	0.262	0.286	0.284	0.307	0.321	0.287	0.295	
28	c. Direct Wage Offset	0.159	0.205	0.245	0.260	0.283	0.281	0.303	0.318	0.284	0.292	
29	B. LEASE/RENTAL											
30	a. Wage Cost Offset	$0.163	$0.211	$0.251	$0.266	$0.289	$0.287	$0.311	$0.325	$0.290	$0.298	
31	b. Wage Offset	0.159	0.206	0.246	0.260	0.283	0.281	0.304	0.319	0.284	0.292	
32	c. Direct Wage Offset	0.158	0.204	0.244	0.258	0.281	0.279	0.301	0.316	0.282	0.290	

Note: Line 24 is applicable to the total miles operated by the equipment during the billing period.

Source: Supplement to the "Report on the Costs of Providing Vehicle Units on Monthly (Rental) Bases For the Transportation of Property Over the Public Highways Within The State of California", Public Utilities Commission of the State of California, San Francisco, 1978.

Exhibit V-2

TABLE I-A & TABLE I-B
DEVELOPMENT OF EQUIPMENT FIXED AND RUNNING COSTS PER STATUTE MILE
AS OF APRIL 1, 1976

Line No.	Item	Standard Semitrailers: Van 1-Axle 21-27 Ft	Standard Semitrailers: Flatbed 1-Axle 21-27 Ft	Standard Semitrailers: Van 2-Axles 35-40 Ft	Standard Semitrailers: Flatbed 2-Axles 35-40 Ft	Gasoline-Powered Tractors, Standard Semitrailers: L.T.L. Tractor & 1-Axle Van Semi C. 7 + C. 13	L.T.L. Tractor & 1-Axle Flatbed Semi C. 7 + C. 14	T.L. Tractor 2 (1-Axle) Van Semi & Dolly C. 8 + 2x C.13 + 12	T.L. Tractor 1-Axle Flatbed Semi & Dolly C.8 + 2x C. 14 + 12	T.L. Tractor 3-Axles & 35-40 Ft Semi Van C.9 + C. 15	T.L. Tractor 3-Axle & 35-40 Ft Semi Flatbed C. 9 + C. 16
(1)		(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
1	Investment										
2	Historical Cost	$4780	$3001	$7252	$4406						
3	Salvage Value	478	300	725	441						
4	Service Value	$4302	$2701	$6527	$3965						
5	Service Life - Years	12	12	12	12						
6	Annual Depreciation Expense	$ 359	$ 225	$ 544	$ 330						
7	Annual Fixed Expenses										
8	Taxes and Licenses										
9	Veh. Reg. - State	$ 11	$ 11	$ 11	$ 11						
10	Veh. Wgt. Fee- State	143	86	274	206						
11	Veh. Lic. Fee - State	36	23	52	36						
12	Hwy. Use Tax - Federal	-	-	-	-						
13	Total (L. 9 to L.12 incl.)	$ 190	$ 120	$ 337	$ 253						
14	Total Annual Depreciation and Fixed Expenses (line 6 + line 13)	$ 549	345	$ 881	$ 583	$1816	$1612	$3055	$2647	$2961	$2663
15	Running Costs Per Mile										
16	Fuel										
17	Cost Per Gallon										
18	Miles Per Gallon										
19	Cost Per Mile										
20	Oil										
21	Tires	$0.005	$0.005	$0.009	$0.009						
22	Maintenance and Repairs	$0.026	0.026	0.032	0.026						
23	Total Dir. CPM (L. 19-22 Incl.)	$0.031	$0.031	0.041	$0.035	$0.279	$0.279	$0.347	$0.347	$0.322	$0.316
24	Tot. Running CPM @ 100 O.R.										
25	A. MONTH-MONTH										
26	a. Wage Cost Offset	$0.036	$0.036	$0.047	$0.041	$0.326	$0.326	$0.406	$0.406	$0.375	$0.368
27	b. Wage Offset	0.035	0.035	0.046	0.040	0.319	0.319	0.397	0.397	0.367	0.361
28	c. Direct Wage Offset	0.035	0.035	0.046	0.040	0.316	0.316	0.393	0.393	0.364	0.358
29	B. 12-MONTHS										
30	a. Wage Cost Offset	$0.036	$0.036	$0.047	$0.041	$0.323	$0.323	$0.401	$0.401	$0.373	$0.366
31	b. Wage Offset	0.035	0.035	0.046	0.040	0.317	0.317	0.393	0.393	0.365	0.359
32	c. Direct Wage Offset	0.035	0.035	0.046	0.040	0.314	0.314	0.390	0.390	0.362	0.356

Exhibit V-3

TABLE I-A & TABLE I-B
DEVELOPMENT OF EQUIPMENT FIXED AND RUNNING COSTS PER STATUTE MILE
AS OF APRIL 1, 1978

Line No.	Item (1)	Diesel-Powered Tractors Standard Semitrailers				Insulated Semitrailers		Gas Tractors Insulated Semitrailers		
		T.L. Tractor 2 (1-Axle) Van Semi & Dolly C.10 + 2 C. 13 + C. 12 (23)	T.L. Tractor 2 (1-Axle) Flatbed Semi & Dolly C. 10 + 2 C. 14 + C. 12 (24)	T.L. Tractor 3 Axles & 35-40 Ft Semi Van C. 11 + C.15 (25)	T.L. Tractor 3 Axles & 35-40 Ft Semi Flatbed C. 11 + C.16 (26)	Van 1 Axle 21-27 Ft (27)	Van 2 Axles 33-40 Ft. (28)	L.T.L. Tractor & 1-Axle Van Semi C.7 + C.27 (29)	T.L. Tractor 2 (1-Axle) Van & Semi & Dolly C.8 + 2 C. 27 + C. 12 (30)	T.L. Tractor 3 Axles & 35-40 Ft. Semi Van C. 9 + C. 28 (31)
1	Investment									
2	Historical Cost					$ 7316	$10,971			
3	Salvage Value					732	1,097			
4	Service Value					$ 6584	$ 9,874			
5	Service Life-Years					10	10			
6	Annual Depreciation Expense					$ 658	$ 987			
7	Annual Fixed Expenses									
8	Taxes and Licenses									
9	Vehicle Registration - State					$ 11	$ 11			
10	Vehicle Weight Fee - State					155	341			
11	Vehicle License Fee - State					55	79			
12	Highway Use Tax - Federal					-	-			
13	Total (L.9 to L.12 incl.)					$ 221	$ 431			
14	Total Annual Depreciation & Fixed Expenses (L. 6 & L.13)	$ 3871	$ 3463	$ 4279	$ 3981	$ 879	$ 1,418	$ 2146	$ 3715	$ 3498
15	Running Costs Per Mile									
16	Fuel									
17	Cost Per Gallon									
18	Miles Per Gallon									
19	Cost Per Mile									
20	Oil					$ 0.005	$ 0.009			
21	Tires					$ 0.032	$ 0.037			
22	Maintenance and Repairs									
23	Total Direct CPM (L. 19-22 incl.)	$ 0.330	$ 0.330	$ 0.299	$ 0.293	$ 0.037	$ 0.046	$ 0.285	$ 0.359	$ 0.327
24	Total Running CPM @ 100 O.M.									
25	A. [illegible]									
26	a. Wage Cost Offset	$ 0.385	$ 0.385	$ 0.349	$ 0.342	$ 0.043	$ 0.054	$ 0.332	$ 0.419	$ 0.382
27	b. Wage Offset	0.377	0.377	0.342	0.335	0.042	0.054	0.325	0.411	0.374
28	c. Direct Wage Offset	0.374	0.374	0.338	0.332	0.042	0.053	0.322	0.407	0.370
29	B. [illegible]									
30	a. Wage Cost Offset	$ 0.382	$ 0.382	$ 0.345	$ 0.340	$ 0.042	$ 0.053	$ 0.329	$ 0.415	$ 0.378
31	b. Wage Offset	0.375	0.375	0.338	0.333	0.041	0.052	0.323	0.407	0.370
32	c. Direct Wage Offset	0.372	0.372	0.335	0.330	0.041	0.052	0.320	0.404	0.376

Table V-4

Annual Costs For Doubles Versus Singles Tractor Trailer Operations From California P.U.C. Data

Equipment Items	Doubles Costs		Singles Costs
Tractor Depreciation (2 axles)	$ 2,610	(3 axle)	$ 3,398
Running Costs (92,500 miles/ year x $.251 per mile)	23,218	92500 miles/year x .$258 per mile	23,865
Trailer Depreciation (2.7 Single Axle @ 27'x$549)	1,482	(1.4 two axle @ 40' x $881	1,233
Running Costs (65,093 Miles x $331 per mile x 2.7 trailers)	5,448	(62 768 miles x $.041 per mile x 1.4 trailer)	3,603
Converter Depreciation (2.0 @ $163)	$ 326		0
Running Costs (65093 miles x $017 per mile x 2.0 converter)	2,213		0
Labor Item			
Direct Wage Offset (92,500 miles x $.372 per mile)	$ 34,410	(92,500 x $.335 per mile)	30,988
Total	$ 67,097		$ 63,087

mile for driver wages while Turnpike Doubles cost 11.7% more in the Central, Southern and the Eastern Conferences.* In the Western Conference drivers of Doubles and Semis are paid at the same labor rate but Triple drivers are paid 8.0% more.

Next, carrier terminal[8] costs were examined in order to see differences from that perspective between doubles and singles operations. It is hypothesized that Western Doubles reduce terminal costs through less dock handling. Table V-5, "Comparison Of Platform Costs For All General Freight Carriers Exceeding $100 Million Total Operating Revenue", was developed for these 34 major carriers showing platform costs as a percent of total operating expenses. The 34 carriers were assigned as to Eastern or Western operators based on the corporate headquarters city. A review of route authority and terminal locations of each carrier was made which confirmed that headquarters was a relatively good indicator of the locus of traffic handled.

The weighted platform percents as a part of total operating expenses and the corresponding weighted % LTL of Total Revenue Freight were as follows:

	Weighted Platform Cost As % Of Total Expense	% LTL Of Total Revenue Freight
Western	15.9%	38.4%
Eastern	16.7%	33.7%

*Includes North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Texas and all states east thereof.

Table V-5

COMPARISON OF PLATFORM COSTS
FOR ALL GENERAL FREIGHT CARRIERS
EXCEEDING $100 MILLION TOTAL OPERATING REVENUE
(Millions)

	Carrier Name	%LTL of total tons	Total Op. Rev. ($)	Platform ($)	Total Op. Costs ($)	% Platform of Total Op. Costs	% Western Doubles
1.	Am. Frt. Systems Inc.	47.5	149.2	29.5	148.9	19.80	40.4
2.	Ark.-Best Frt. Systems, Inc.*	28.6	135.9	18.4	125.4	14.64	16.6
3.	Assoc. Truck Lns. Inc.	35.3	124.5	19.3	117.2	16.42	24.0
4.	Bowman Trptn. Inc.	21.9	126.7	11.3	112.8	10.01	0
5.	Branch Motor Express Co.	37.1	126.4	12.9	122.1	10.60	0
6.	Carolina Frt. CRRS Corp.	34.0	190.6	27.8	181.5	15.29	0
7.	Central Frt. Lns. Inc.*	41.0	133.0	23.4	125.2	18.68	5.0
8.	Consl. Frtwys Corp. of Del.*	55.8	758.4	123.3	678.3	18.17	77.6
9.	Delta Lines Inc.*	70.6	126.7	20.0	113.3	17.65	100.0
10.	E. TX. Motor Frt. Lns.*	31.6	215.3	23.0	202.0	11.38	60.4
11.	Garrett Frt-Lines, Inc.*	47.5	130.3	21.1	120.3	17.54	96.9
12.	Gateway Trptn. Co. Inc.	25.5	147.3	22.3	148.9	14.96	20.4
13.	IML Frt. Inc.*	41.3	161.3	19.1	160.0	11.96	76.0
14.	IL-Calif. Exp. Inc.*	34.5	104.3	12.2	97.7	12.49	55.5
15.	Interstate Mtr. Frt. Sys.	19.0	222.1	28.0	211.8	13.22	78.9
16.	Jones Mtr-AL Corp.	33.0	119.5	18.2	114.3	15.78	0
17.	Lee Way Mtr. Frt. Inc.*	40.2	167.9	25.2	165.7	15.24	29.4
18.	Mason & Dixon Lns. Inc.	24.8	168.6	24.1	162.1	14.91	0
19.	McLean Trucking Company	39.6	447.5	80.2	424.6	18.89	25.0
20.	Navajo Frt. Lines Inc.*	18.1	131.6	13.6	136.0	10.00	16.6

*Western Carrier

Table V-5 - (continued)

COMPARISON OF PLATFORM COSTS
FOR ALL GENERAL FREIGHT CARRIERS
EXCEEDING $100 MILLION TOTAL OPERATING REVENUE
(Millions)

	Carrier Name	%LTL of total tons	Total Op. Rev. ($)	Platform ($)	Total Op. Costs ($)	% Platform of Total Op. Costs	% Western Doubles
21.	ONC Frt. Sys. Inc.*	56.0	101.7	14.4	104.2	13.8	100.0
22.	Overnite Trptn. Co.	33.9	194.8	23.1	167.5	13.8	0
23.	Pac. Intermt. Exp.*	15.9	319.7	37.3	295.3	12.6	81.5
24.	Pilot Frt. Carriers, Inc.	35.3	129.0	18.7	122.3	15.3	0
25.	Preston Trucking Co., Inc.	40.5	145.2	26.0	134.8	19.3	6.7
26.	Red Ball Mtr. Frt. Inc.*	41.5	105.6	19.7	100.0	19.7	61.0
27.	Roadway Exp. Inc.	55.9	918.1	204.1	824.5	24.8	0
28.	Ryder Truck Lines, Inc.	21.4	460.6	41.7	420.4	9.9	0
29.	Smiths Transfer Corp.	38.2	226.4	37.1	207.3	17.9	13.7
30.	Spector Ind. Inc.	26.3	288.9	38.0	277.0	13.7	0
31.	Time-DC Inc.*	26.7	168.2	17.5	160.5	10.9	48.6
32.	Transcon Lines*	39.1	228.3	35.6	219.1	16.2	33.0
33.	Wilson Frt. Co.	34.7	158.5	22.1	160.7	13.7	0
34.	Yellow Frt. System Inc.*	37.6	678.3	115.2	620.9	18.6	31.1
	TOTAL	NA	8,010.	1,223.5	7,482.6	16.3	NA

*Western Carrier

Source: American Trucking Association, Financial and Operating Statistics, Full Year 1978-1977, Section I General Freight Carriers pp. 1-73, Washington, D.C. 1979.

Western Doubles Data from Carrier Contacts and Equipment Interchange Association, International Registry of Trailer Container and Chassis Equipment, Issued August 20, 1978 Volume II-1978, pp 17-128 Washington D.C. 1978

While the numbers suggest that Eastern terminal costs are higher than in the West, and therefore the benefit of Western Doubles is confirmed, a close inspection of Table V-5 reveals a range of values for known Western Doubles users which is higher than that for singles users. This fact suggests that there are factors other than Western Doubles which result in the East-West platform cost differential. The great percentage of LTL freight should lead to higher average platform costs for Western carriers, but it appears that this is not the case. It may be that the Western Doubles is making the difference. In a like comparison, a major nationwide carrier which relies heavily on Western Doubles provided data which permitted computation of its terminal expenses on a hundredweight basis by region.

Total Terminal Expense by Region per Hundredweight for January - March, 1979

Region	Terminal[9] Expenses per CWT
Western	$3.448
Central	$3.581
Southern	$3.603
Eastern	$4.159

This selected data points to a reduced cost for those areas relying most heavily on Western Doubles. This same carrier has, however, higher total platform costs on a system-wide basis than the average for the thirty-four carriers as a group or for the sub-groupings East and West of those carrier

This carrier's system platform costs are higher than other carriers with similar traffic characteristics which predominately use single forty-five foot trailers.

A plot was prepared of the percent platform costs to total operating costs for those carriers where data was available as to percent of Western Doubles in its fleet to total trailers (17 different motor carriers). The plot, Exhibit V-4, "Percent Platform Costs of Total Operating Costs versus Percent Western Doubles For Selected General Freight Carriers Exceeding $100 Million Total Operating Revenue", shows no relationship at all between Western Doubles ownership and the level of platform costs.

Another plot, Exhibit V-6, "Operating Ratios Versus Percent Western Doubles For Largest Carriers", shows that there is no strong relationship between the two. One of the largest and most profitable carriers has no Western Doubles. The dispersion appears to be balanced between Western Doubles users and non-users. The average operating ratio for heavy Western Doubles users is 93.0 while for those with fewer or none, the operating ratio is 94.3. See Table III-2, "Operating Ratios and Percentage of LTL Freight of The Nation's Largest Common Carriers Whose Trailer Fleet Is Comprised More Than 50% Western Doubles", for these figures.

Percent Platform Costs of Total Operating Costs Versus Percent Western Doubles for Selected General Freight Carriers Exceeding $100 Million Total Operating Revenue

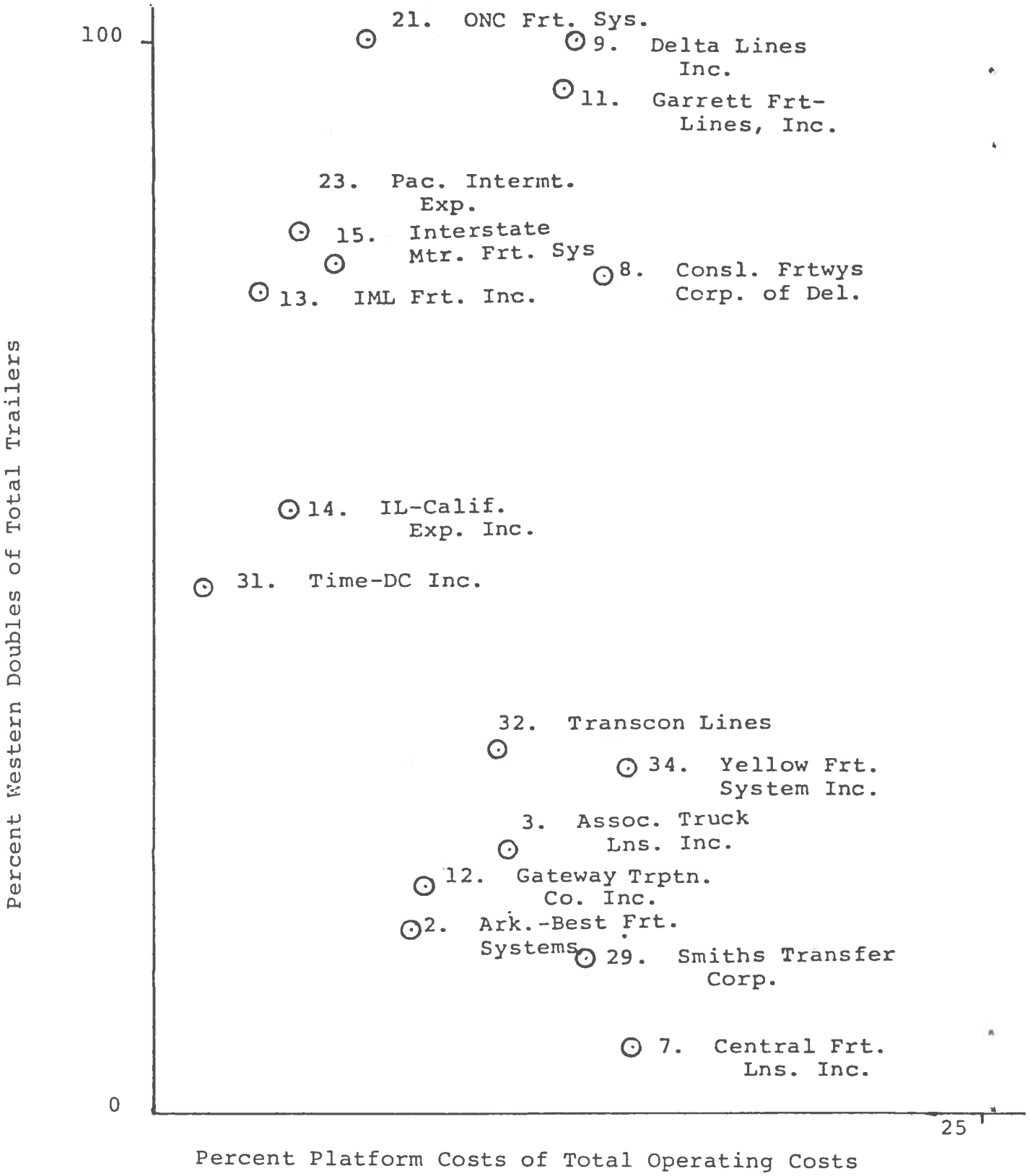
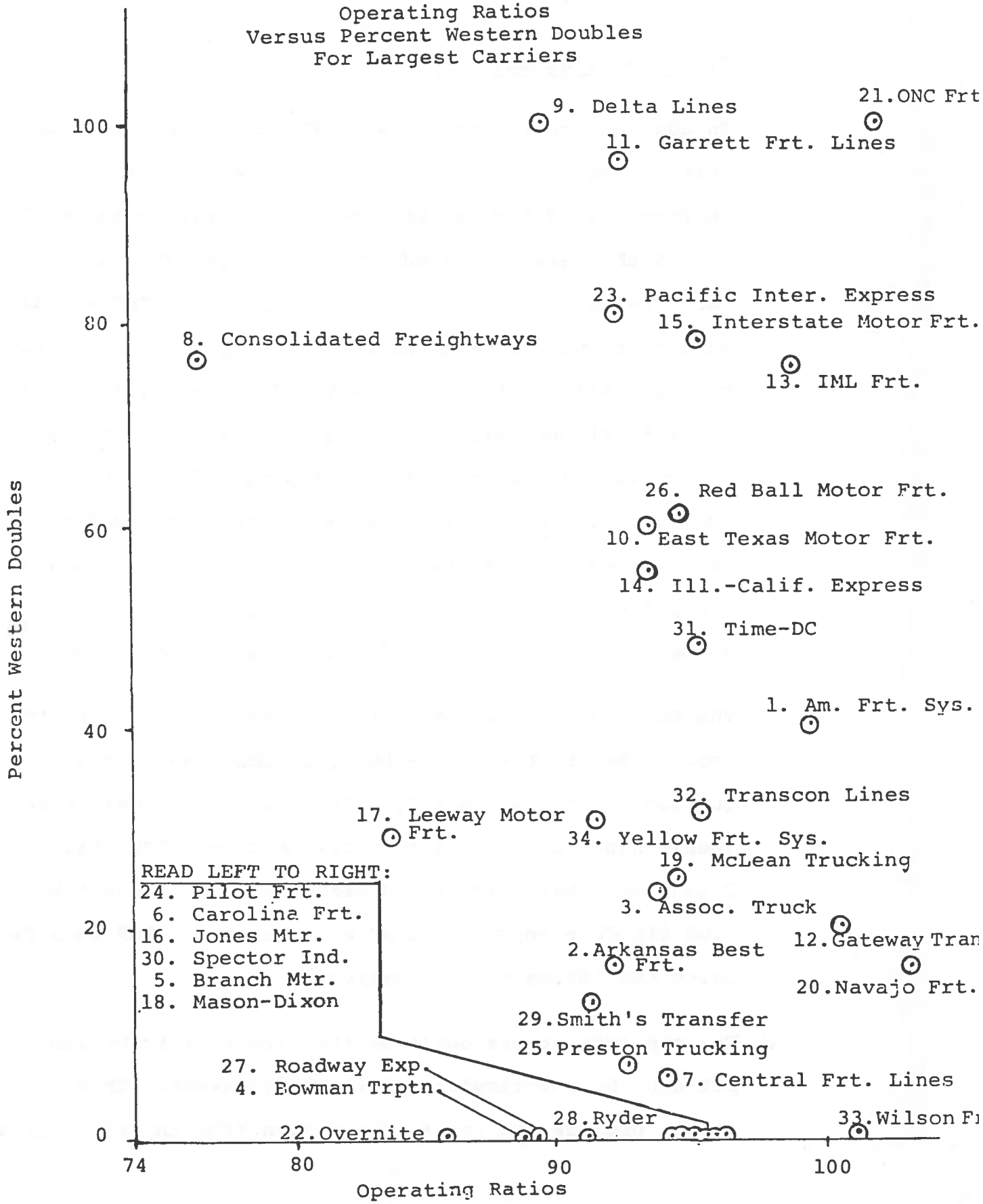


Exhibit V-6


Operating Ratios
Versus Percent Western Doubles
For Largest Carriers
Percent Western Doubles
Operating Ratios
0
20
40
60
80
100
74
80
90
100
9. Delta Lines
21.ONC Frt
11. Garrett Frt. Lines
23. Pacific Inter. Express
15. Interstate Motor Frt.
8. Consolidated Freightways
13. IML Frt.
26. Red Ball Motor Frt.
10. East Texas Motor Frt.
14. Ill.-Calif. Express
31. Time-DC
1. Am. Frt. Sys.
32. Transcon Lines
17. Leeway Motor Frt.
34. Yellow Frt. Sys.
19. McLean Trucking
3. Assoc. Truck
12.Gateway Tran
2.Arkansas Best Frt.
20.Navajo Frt.
29.Smith's Transfer
25.Preston Trucking
7. Central Frt. Lines
33.Wilson Fr
28.Ryder
22.Overnite
27. Roadway Exp
4. Bowman Trptn
READ LEFT TO RIGHT:
24. Pilot Frt.
6. Carolina Frt.
16. Jones Mtr.
30. Spector Ind.
5. Branch Mtr.
18. Mason-Dixon

E. Rate Relationships

In addition to the analysis of the class rate structure that was performed in Task 3, a further analysis was performed to determine the impact that rate relationships had on shippers. This analysis was approached using the large multi-shipper data base maintained by TDS as part of a continuing freight bill processing function. This program called "FACTS" (Freight Audit Computerized Traffic Statistics) consists of an audit, coding, data entry, and report generation of various shipping information for a number of clients by Traffic Data Systems of Burlington, Massachusetts. A portion of the FACTS program consists of a zip code program which has the ability to summarize shipping statistics by origin and destination groups.

The TDS zip code reports were analyzed and the results accumulated by both less-than truckload and truckload quantities, in Tables V-6, "TDS Facts Client Data Base (Less-Than-Truckload Statistics)" and V-7, "TDS Facts Client Data Base (Truckload Statistics)". Exhibit V-5, "TDS Zip Code Report", is an example of the TDS data from which the tables were assembled.

- The zip code report outlines the firm's distribution patterns by identifying major traffic lanes. This report provides shipment information from an origin to a

Table V-6

"TDS FACTS CLIENT DATA BASE (LESS-THAN-TRUCKLOAD STATISTICS)"

	AVERAGE				
	MILEAGE	WEIGHT	COST PER HUNDRED WEIGHT	REVENUE	REVENUE PER TON MILE
CORRIDOR 1: Boston MA - Miami FL					
Lane A (0-500)	258	1440	$3.68	$52.99	$ .285
Lane B (500-900)	666	1029	7.17	73.81	.215
Lane C (900)	1125	1388	8.40	116.56	.149
Average Lane	374	1335	$ 4.56	$ 60.87	$ .244
CORRIDOR 2: St. Paul-Boston MA					
Lane A (0-500)	342	1062	$5.51	$58.53	$ .322
Lane B (500-900)	776	1320	6.64	87.65	.171
Lane C (900 -)	1118	1774	7.88	139.79	.141
Average Lane	600	1211	$6.23	$75.47	$ .208
CORRIDOR 3: St. Paul-Miami FL					
Lane A (0-500)	355	745	$6.41	$47.78	$ .362
Lane B (500-900)	717	1251	7.45	93.24	.208
Lane C (900 -)	1138	484	13.03	63.06	.229
Average Lane	494	783	$ 7.14	$ 55.92	$ .290

Table V-6 (continued)
"TDS FACTS CLIENT DATA BASE (LESS-THAN-TRUCKLOAD STATISTICS)"

	AVERAGE				
	MILEAGE	WEIGHT	COST PER HUNDRED WEIGHT	REVENUE	REVENUE PER TON MILE
AVERAGE LONG SINGLE CORRIDOR:					
Lane A (0-500)	278	1247	$ 4.20	$52.39	$ .303
Lane B (500-900)	697	1109	7.09	78.60	.204
Lane C (900 -)	1125	1109	9.03	100.14	.160
Average Lane	420	1206	$ 5.12	$61.72	$ .244

Table V-6 (continued)
"TDS FACTS CLIENT DATA BASE (LESS-THAN-TRUCKLOAD STATISTICS)"

	MILEAGE	AVERAGE WEIGHT	C/CWT	AVERAGE REVENUE	REVENUE PER TO MILE
CORRIDOR 4: Chicago - Dallas					
Lane A (0-500)	342	1529	$4.72	$72.19	$ .277
Lane B (500-900)	667	958	7.41	71.00	.223
Lane C (900-)	944	1008	10.17	102.48	.215
Average Lane	485	1245	$5.93	$73.85	$ .245
CORRIDOR 5: St. Paul - Seattle					
Lane A (0-500)	432	877	$5.63	$49.37	$ .261
Lane B (500-900)					
Lane C (900-)	1536	1544	14.40	222.39	.188
Average Lane	796	1022	$8.51	$ 86.98	$ .214
CORRIDOR 6: Chicago-Los Angeles					
Lane A (0-500)	399	667	$5.65	$ 37.68	$ .283
Lane B (500-900)	630	1317	5.55	73.10	.176
Lane C (900 -)	1673	968	10.83	104.88	.129
Average Lane	820	871	$ 7.05	$ 61.41	$ .172

Table V-6 (continued)
"TDS FACTS CLIENT DATA BASE (LESS-THAN-TRUCKLOAD STATISTICS)"

	MILEAGE	AVERAGE WEIGHT	C/CWT	AVERAGE REVENUE	REVENUE PER TO MILE
CORRIDOR 7: San Francisco - Dallas					
Lane A (0-500)	407	809	$4.84	$39.16	$ .237
Lane B (500-900)	704	859	8.56	73.55	.244
Lane C (900-)	1333	1163	10.41	121.11	.156
Average Lane	548	842	$6.05	$50.95	$ .221
CORRIDOR 8: Seattle-Los Angeles					
Lane A (0-500)	346	618	$6.09	$37.65	$ .352
Lane B (500-900)	670	896	7.25	64.97	.217
Lane C (900-)	1048	791	6.05	47.86	.116
Average Lane	465	666	$6.26	$41.66	$ .269
AVERAGE WESTERN DOUBLES CORRIDOR:					
Lane A (0-500)	358	782	$5.67	$44.36	$ .317
Lane B (500-900)	665	969	7.12	68.99	.214
Lane C (900-)	1253	883	8.24	72.76	.132
Average Lane	532	826	$6.29	$51.93	$ .236

Table V-7
"TDS FACTS CLIENT DATA BASE (TRUCKLOAD STATISTICS)"

	AVERAGE				
	MILEAGE	WEIGHT	C/CWT	REVENUE	REVENUE PER TO MILE
CORRIDOR 1: Boston MA - Miami FL					
Lane A (0-500)	302	33097	$1.36	$450.12	$ .090
Lane B (500-900)	658	33357	2.59	863.94	.079
Lane C (900 -)	1047	40113	2.56	1026.89	.049
Average Lane	564	34633	$1.93	$668.41	$ .068
CORRIDOR 2: St. Paul - Boston MA					
Lane A (0-500)	392	35750	$1.35	$482.63	$ .069
Lane B (500-900)	777	30255	2.79	844.66	.072
Lane C (900-)	1085	36347	2.51	912.30	.046
Average Lane	822	33553	$2.39	$800.95	$ .058
CORRIDOR 3: St. Paul - Miami FL					
Lane A (0-500)	435	20729	$2.80	$580.41	$ .129
Lane B (500-900)	761	30444	3.29	1001.59	.086
Lane C (900-)	1068	36713	3.24	1189.70	.062
Average Lane	990	33994	$3.21	$109.22	$ .065

Table V-7 (continued)
"TDS·FACTS CLIENT DATA BASE (TRUCKLOAD STATISTICS)"

	AVERAGE				
	MILEAGE	WEIGHT	C/CWT	REVENUE	REVENUE PER TON MILE
AVERAGE LONG SINGLES CORRIDOR:					
Lane A (0-500)	328	32894	$1.40	$460.52	$.085
Lane B (500-900)	714	31804	2.71	861.90	.076
Lane C (900-)	1065	37840	2.75	1041.69	.052
Average Lane	697	34238	$2.23	$763.51	$.064
CORRIDOR 4: Chicago - Dallas					
Lane A (0-500)	223	30082	$3.34	$1004.72	$.300
Lane B (500-900)					
Lane C (900-)	954	29308	4.31	1262.80	.090
Average Lane	663	29610	$3.92	$1160.73	$.118
CORRIDOR 5: St. Paul - Seattle					
Lane A (0-500)					
Lane B (500-900)					
Lane C (900-)					
Average Lane					

Table V-7 (continued)
"TDS FACTS CLIENT DATA BASE (TRUCKLOAD STATISTICS)"

	AVERAGE				
	MILEAGE	WEIGHT	C/CWT	REVENUE	REVENUE PER TO MILE
CORRIDOR 6: Chicago-Los Angeles					
Lane A (0-500)	451	20656	$2.64	$545.32	$.117
Lane B (500-900)	724	29653	2.13	631.61	.059
Lane C (900-)	1734	29257	4.11	1202.48	.047
Average Lane	1604	28360	$3.94	$1117.38	$.049
CORRIDOR 7: San Francisco - Dallas					
Lane A (0-500)	354	17886	$2.98	$ 533.00	$ .168
Lane B (500-900)					
Lane C (900-)	1509	23750	6.34	1505.78	.084
Average Lane	525	18565	$3.48	$ 645.86	$ .133
CORRIDOR 8: Seattle - Los Angeles					
Lane A (0-500)	379	24016	$2.80	$ 672.44	$ .148
Lane B (500-900)	809	19753	4.18	825.68	.103
Lane C (900-)	962	15983	5.20	831.12	.108
Average Lane	396	23735	$2.87	$ 681.19	$ .145

Table V-7 (continued)
"TDS FACTS CLIENT DATA BASE (TRUCKLOAD STATISTICS)"

	AVERAGE				
	MILEAGE	WEIGHT	C/CWT	REVENUE	REVENUE PER TON MILE
AVERAGE WESTERN DOUBLES CORRIDOR:					
Lane A (0-500)	373	21791	$2.85	$620.41	$ .153
Lane B (500-900)	762	24253	3.04	737.29	.080
Lane C (900-)	1666	28549	4.27	1219.02	.051
Average Lane	954	24397	$3.48	$850.13	$ .073

MONTH SEPT
DALLAS TEXAS

XXXX COMPANY TDS ZIP CODE REPORT

EXHIBIT V - 5

DESTINATION	CURRENT MONTH C/CWT	CURRENT MONTH POUNDS	CURRENT MONTH SHIPMENTS	CURRENT MONTH CHARGES	YEAR TO DATE C/CWT	YEAR TO DATE POUNDS	YEAR TO DATE SHIPMENTS	YEAR TO DATE CHARGES
COLORADO								
DENVER								
LTL (UNDER 10,000)	81.70	553	2	451.82	7.12	68465	29	4876.32
TRUCKLOAD (OVER 10)	4.71	79484	5	3748.35	4.17	780290	34	32594.05
TOTAL **	5.24	80037	7	4200.17	4.41	848755	63	37470.37
DENVER								
AIR	130.11	72	1	93.68	139.48	92	2	128.33
LTL (UNDER 10,000)	2.51	8416	3	212.03	5.64	56725	62	3203.79
UNKNOWN					38.58	60	1	23.15
TOTAL **	3.60	8488	4	305.71	5.89	56877	65	3355.27
DENVER								
AIR	104.12	96	1	99.96	121.51	449	5	545.62
LTL (UNDER 10,000)	4.23	18488	15	783.72	5.33	248904	192	13277.86
TRUCKLOAD (OVER 10)	4.97	17604	1	875.82	3.82	232906	11	8905.21
TOTAL **	4.96	36188	17	1759.50	4.71	482259	208	22728.69
BOULDER								
AIR					19.97	9488	6	1895.56
LTL (UNDER 10,000)	2.93	102479	23	3005.25	2.26	851253	267	19257.72
TRUCKLOAD (OVER 10)	6.65	74975	6	4990.11	3.59	709488	36	25537.93
TOTAL **	4.50	177454	29	7995.36	2.97	1570229	309	46691.21
GOLDEN								
LTL (UNDER 10,000)					4.63	1999	4	92.67
TOTAL **					4.63	1999	4	92.67
LONGMONT								
LTL (UNDER 10,000)	7.75	4500	1	348.90	7.07	34469	10	2438.91
TOTAL **	7.75	4500	1	348.90	7.07	34469	10	2438.91

DALLAS TEXAS

DESTINATION	CURRENT MONTH C/CWT	CURRENT MONTH POUNDS	CURRENT MONTH SHIPMENTS	CURRENT MONTH CHARGES	YEAR TO DATE C/CWT	YEAR TO DATE POUNDS	YEAR TO DATE SHIPMENTS	YEAR TO DATE CHARGES
COLORADO								
GLENWOOD SPRINGS								
LTL (UNDER 10,000)					9.83	96	1	9.44
TOTAL **					9.83	96	1	9.44
**DESTINATION TOTAL								
AIR	115.26	168	2	193.64	26.72	10279	14	2747.29
LTL (UNDER 10,000)	3.74	140548	53	5262.88	3.53	1289878	610	45549.71
TRUCKLOAD (OVER 10)	5.58	172063	12	9614.28	3.90	1733384	82	67713.58
UNKNOWN					38.58	60	1	23.15
TOTAL **	4.81	312779	67	15070.80	3.82	3033601	707	116033.73

particular destination by use of a client-designated zip code cluster. For example, on shipments from Boston, Massachusetts to Chicago, Illinois, the computer program may group the three digit zip codes for Arlington Heights (600), Aurora (605), Belleville (622) and Chicago (606) all together in one cluster.

Individual reports may also include information by transportation mode plus complete data on the component legs of each shipment (line haul, LTL, distributor, etc.) For example, this Exhibit V-5 includes current month as well as year-to-date data by mode; air, rail, less-than-truck-load and truckload. The report further breaks down the shipments by destination to show cost per hundred pounds, pounds, shipments and total charges.

The clients whose zip code reports were researched include:

- A large New England based computer manufacturer with an extensive distribution system throughout the North, South, and Midwest.
- One of the nation's largest manufacturers of personal care items who distributes millions of tons annually throughout the country.
- An international corporation which manufactures a diversity of products ranging from medical supplies to sporting goods to coatings and products for industrial applications.

- A leading paper and envelope manufacturer/distributor with plants located nationwide and an extensive distribution network.

- One of the leaders in the chemical specialty business who manufacture such products as detergents and janitorial supplies and distributes country-wide.

- A New England manufacturer of paints, stains, and varnishes who distributes within the Northeast, South, and Mid-West.

The results of the less-than-truckload research for these particular clients shows that the revenue per ton-mile for the average shipment is slightly lower in the West than the East ($.236 compared to $.244). Further analysis reveals, the average weight is considerably lower (68.5% less in the West than the East while the average miles traveled is approximatel 27% greater in the West.

The revenue per ton-mile results, from the FACTS client data base, do not necessarily coincide with the results from the class rate analysis. Possible reasons for this slight inconsistency may be:

- The average length of haul is greater in the West, therefore, the revenue per ton-mile is bound to be less because of the tapering principle. The "tapering principle" says that as the length of haul increases the revenue per mile decreases.

- For these particular clients and the types of products being shipped in the West, the commodity class rating may be lower than for those commodities in the East.

The truckload statistics derived from the FACTS data reveals the following results:

- The average length of haul is approximately 37% greater in the West than the East. (954 miles compared to 697 miles)
- The average truckload shipment weighs 71.3% less in the West than the East (24,397 pounds compared to 34,238 pounds).
- The revenue per ton-mile is 14% greater in the West than in the East ($.073 compared to $.064)

These results are consistent with these of the Class 35 30,000 pound rate results where the revenue per ton-mile was greater in the West than in the East.

VI. TSC EDITORIAL FOOTNOTES

1. It is still unclear what types of truck load shipments require long semi-trailers because of handling procedures such as those just described or because of the need for long trailer beds due to stock length, and those which might be better served by multiple short trailers provided by Western Doubles. TSC has assumed only LTL services would opt for Western Doubles in study scenarios where the eastern state prohibitions were eliminated.

2. The implication here is that mixed fleet equations tend to have higher empty mile to loaded mile ratios, or stated another way, they would have a lower average load per vehicle mile.

3. It is assumed that both carriers were experiencing equal loaded densitites in their respective combination trucks in order to accept the pounds per running foot measure as a measure of cube utilization.

4. Additional research is required to provide insight into the relative size or importance of truck load movements requiring long boxes or trailer beds versus those requiring more cube in any form (e.g. width, height or multiple trailers). The study team has been unable to estimate the penetration of Western Doubles into the 45 foot trailer truck load operations under scenarios eliminating the eastern states prohibition.

5. It is not clear if 27 foot Matson Line Containers constitute a large portion of the Western Doubles traffic reported in the pacific coast states (page 15).

6. One must assume here that the nationwide carrier has an essentially equal proportion of his revenue tonnage in LTL shipments in the "West" and in the "East".

7. The LTL rates are only 8 percent higher in the west than in the east, while the TL rates are 32 percent higher in the west than in the east. Since only LTL uses the Western Doubles, may one infer from this that Western Doubles usage in the west is reflected in these rate levels?

8. Platform handling costs only are referred to here excluding PU&D.

9. Platform handling costs are refered to here excluding PU&D.

Annotated Bibliography

Escobosa, Paul. Some Aspects of Transportation of Fruits and Vegetables in the Western Part of the United States. Graduate School of Business, Stanford University, Stanford, California, 1968.

An analysis of the impact of transportation costs on moving California fruits and vegetables in process and to market.

Vehicle size and weight regulations have a direct impact on cost.

Capener, William N., Stephens, William P., St. Clair, James S., and Harold Abel. "Transportation of Cattle in the West," Research Journal, XXV, (January, 1969), Agricultural Experiment Station, University of Wyoming, Laramie.

The cattle industry is in part a result of the transportation system. Transportation is the largest cost of marketing western livestock. The lack of uniformity in regulations governing the size and weight of vehicles has created a barrier to full interstate movement of livestock.

Fuller, John W. Transportation in the Western Livestock Industry. Western Highway Institute, San Francisco, 1966.

Highway freight transportation has contributed greatly to change in the livestock industry and to the improved quality of meat available to consumers. To effectively lower freight costs any further, it is necessary to increase vehicle lengths and to increase gross vehicle weights.

Fuller, John W. Transportation in the Western Forest Products Industry. Western Highway Institute, San Francisco, 1966.

Lumber manufacturing has the highest relative freight expense of any manufacturing industry and paper manufacturing is not behind. There is no doubt that vehicle size and weight increases enable produces, consumers, and carriers to get more from their transportation dollar.

St. Clair, James, S. Truck Size and Weight Laws as Barriers to the Interstate Movement of Livestock. Agricultural Experiment Station, University of Wyoming, Laramie, 1965.

If the trucking industry is to realize its full transportation potential, weight and length limitations must be made as uniform and as liberal as possible. Uniformity in truck regulations must come about through (1) improvement of sub-standard roadways and (2) cooperation and reciprocal agreements

Western Highway Institute. "Trucking, Lifeline to California Carriers," Information Bulletin, VI, Western Highway Institute, San Francisco, 1951.

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ICC report follows required guide.

Consolidated Freightways Corporation. 1978 Annual Report 50 Years of Innovation and Service. Portland, Oregon, 1979.

Good public relations piece on Consolidated Freightway history.

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Facts about Consolidated Freightways for the interested professional.

Zandi, Iraj, and John Warner. "Cost Comparison Among Various Modes of Freight Transport Prepared For US DOT," Transport of Solid Commodities via Freight Pipeline, I, Research and Special Programs Administration, Office of University Research, Washington, D.C., Department of Civil and Urban Engineering, University of Pennsylvania, Philadelphia, 1978.

Intensive analysis of various freight movement modes from academic viewpoint.

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Gives present day patchwork picture and analyzes difficult recommendations aimed at gaining uniformity.

Maio, D.J., et. al. Analyzing the Impacts of Universal Use of Western Doubles. Transportation Systems Center, Cambridge, Massachusetts, 1978.

Hits high points of proposed approach to Western Doubles usage impact.

Encisco, Ben. Fuel and Labor Savings Through Greater Truck Sizes and Weights. Consolidated Freightways Institute For Professional Development, Portland, Oregon, 1978.

Analysis of savings by use of larger equipment throughout Consolidated's system. Cost analysis is very thorough.

Kaspar, J.C. Report on a Study of the Cost of Transporting Property in California by Motor Vehicle Equipment. California Trucking Association, Berkeley, California, 1962.

Reports current costs of motor freight transportation for different areas, functions and types of service.

Barbato, Philip J., and Carl W. Swerdloff. Truck Size and Weight: An Issue Paper. Intermodal Studies Division, Office of the Assistant Secretary for Policy and International Affairs, United States Department of Transportation, May 1978.

Good white paper on all sides of the question of increasing and making more uniform truck sizes and weights.

Ainsworth, D.P., et. al. Reebie Associates. An Improved Truck/Rail Operation: Evaluation of a Selected Corridor. United States Department of Transportation Federal Highway Administration, Washington, D.C., 1975.

A detailed analysis of the cost, rates, labor problems, diversion and other impacts of an improved rail operation in the Los Angeles to Portland corridor. Triples would make improved rail operation questionable.

APPENDIX

"TARIFF REFERENCES FOR CORRIDOR - AVERAGE RATES"

CORRIDOR 1
Boston MA - Miami FL

City Pairs	Tariff	LTL 500 LBS Class 100	LTL 500 LBS Class 77½	LTL 500 LBS Class 55	T. L. 30,000 LBS Class 35
400 MILES					
Boston MA - Baltimore MD	MAC 501-C	9.48	7.69	5.73	1.88
Baltimore MD - Charlotte NC	SMC 530-A	7.97	6.14	4.40	1.93
Atlanta GA - Wilmington NC	SMC 500-A	8.16	6.49	4.80	1.76
		25.61	20.32	14.93	5.57
	Average Rate	8.54	6.77	4.98	1.86
800 MILES					
Boston MA - Bristol VA	MAC 501-C	11.87	9.54	7.05	2.69
Philadelphia PA - Waycross GA	SMC 530-A	11.60	9.03	6.41	2.85
Miami FL - Raleigh NC	SMC 500-A	11.39	8.96	6.57	2.56
		34.86	27.53	20.03	8.10
	Average Rate	11.62	9.18	6.68	2.70
1500 MILES					
Boston MA - Miami FL	SMC 530-A	16.95	13.18	9.33	4.64
	Average Rate	16.96	13.18	9.33	4.64

"TARIFF REFERENCES FOR CORRIDOR - AVERAGE RATES"

CORRIDOR 2
St. Paul MN - Boston MA

City Pairs	Tariff	LTL 500 LBS Class 100	LTL 500 LBS Class 77½	LTL 500 LBS Class 55	T. L. 30,000 LBS Class 35
400 MILES					
St. Paul MN - Chicago IL	MWB 501-D	9.31	7.56	5.81	1.85
Cleveland OH - Doylestown PA	ECMC 531-J	9.76	7.69	5.64	2.00
Pittsburgh PA - Utica NY	MAC 500-C	9.35	7.58	5.66	1.86
Boston MA - Lock Haven PA	MAC 501-C	9.60	7.77	5.80	1.95
		38.02	30.60	22.91	7.66
	Average Rate	9.51	7.65	5.73	1.92
800 MILES					
Bismark ND - Elgin IL	MWB 502-C	14.38	11.47	8.59	3.09
Clinton IA - Hazleton PA	ECMC 531-J	12.44	9.76	7.08	2.83
Bangor ME - Pittsburgh PA	MAC 501-C	12.72	10.21	7.56	2.73
		39.54	31.44	23.23	8.65
	Average Rate	13.18	10.48	7.74	2.88
1500 MILES					
Boston MA - Brainerd MN	ECMC 533-D	17.14	13.43	9.63	4.94
	Average Rate	17.14	13.43	9.63	4.94

"TARIFF REFERENCES FOR CORRIDOR - AVERAGE RATES"

CORRIDOR 3
St. Paul MN - Miami FL

City Pairs	Tariff	LTL 500 LBS Class 100	LTL 500 LBS Class 77½	LTL 500 LBS Class 55	T. L. 30,000 LBS Class 35
400 MILES					
St. Paul MN - Chicago IL	MWB 501-D	9.31	7.56	5.81	1.85
Indianapolis IN - Johnson Cty TN	CSA 501	9.16	7.36	5.54	1.81
Selma AL - Jacksonville FL	SMC 500-A	7.77	6.22	4.63	1.66
		26.24	21.14	15.98	5.32
	Average Rate	8.75	7.05	5.33	1.77
800 MILES					
Bismark ND - Burlington IA	MWB 502-C	13.74	10.96	8.19	2.95
Chicago IL - Fayetteville NC	CSA 501	12.47	9.93	7.36	3.01
Ft. Lauderdale FL - Rocky Mt. NC	SMC 500-A	11.39	8.96	6.57	2.56
	Average Rate	12.53	9.95	7.37	2.84
1500 MILES					
Des Moines IA - Miami FL	SMC 560-A	18.00	14.09	10.19	5.69
	Average Rate	18.00	14.09	10.19	5.69

"TARIFF REFERENCES FOR CORRIDOR - AVERAGE RATES"

CORRIDOR 4
Chicago, IL - Dallas, TX

City Pairs	Tariff	LTL 500 LBS Class 100	LTL 500 LBS Class 77½	LTL 500 LBS Class 55	T. L. 30,000 LBS Class 35
400 MILES					
Appleton WS - Quincy IL	MWB 501-D	9.47	7.68	5.89	1.88
Decator IL - Batesville AR	MWB 540-B	8.69	6.81	4.88	1.92
Fayetteville AR - Lufkin TX	MWB 571-A	9.02	7.11	5.19	1.79
		27.18	21.60	15.96	5.59
	Average Rate	9.06	7.20	5.32	1.86
800 MILES					
Chicago IL - Hugo OK	MWB 540-B	12.41	9.73	6.95	3.83
Brownsville TX - Ft. Smith AR	MWB 571-A	12.71	9.98	7.20	2.63
		25.12	19.71	14.15	6.46
	Average Rate	12.56	9.86	7.08	3.23
1500 MILES					
St. Cloud, MN - Brownsville TX	MWB 535-D	18.88	14.89	10.86	6.13
	Average Rate	18.88	14.89	10.86	6.13

"TARIFF REFERENCES FOR CORRIDOR - AVERAGE RATES"

CORRIDOR 5
St. Paul MN - Seattle WA

City Pairs	Tariff	LTL 500 LBS Class 100	LTL 500 LBS Class 77½	LTL 500 LBS Class 55	T. L. 30,000 LBS Class 35
400 MILES					
St. Paul MN - Mobridge SD	MWB 502-C	9.83	8.00	6.08	1.95
Bismark ND - Billings, MT	RMB 521-A	12.85	9.96	7.07	(1)4.11
Missoula MT - Yakima WA	RMB 328-B	9.21	7.14	5.07	2.38
		31.89	25.10	18.22	8.44
	Average Rate	10.63	8.37	6.07	2.81
800 MILES					
St. Cloud MN - Lewiston MT	RMB 521-A	13.27	10.28	7.30	(1)4.23
Billings MT - Seattle WA	RMB 328-B	11.91	9.23	6.55	3.07
Dickinson ND - Spokane WA	RMB 521-A	16.09	12.47	8.85	(1)5.52
		41.27	31.98	22.70	12.82
	Average Rate	13.76	10.66	7.57	4.27
1500 MILES					
St. Paul MN - Wenatchee WA	RMB 521-A	17.54	13.59	9.65	(1)6.07
	Average Rate	17.54	13.59	9.65	(1)6.07

(1) Class 45 lowest truckload rating published.

"TARIFF REFERENCES FOR CORRIDOR - AVERAGE RATES"

CORRIDOR 6
Chicago IL - Los Angeles CA

City Pairs	Tariff	LTL 500 LBS Class 100	LTL 500 LBS Class 77½	LTL 500 LBS Class 55	T. L. 30,000 LBS Class 35
400 MILES					
Chicago IL - Jefferson Cty MO	MWB 501-D	9.31	7.56	5.81	1.85
Denver CO - Price UT	RMB 334-A	10.49	8.14	5.76	2.87
Cedar City UT - Pomona CA	RMB 330-A	11.70	9.07	6.44	2.90
		31.50	24.77	18.01	7.62
	Average Rate	10.50	8.26	6.00	2.54
800 MILES					
Chicago IL - Oakley KS	MWB 502-C	14.38	11.47	8.59	3.09
Los Angeles CA - Durango CO	RMB 330-A	16.50	12.79	9.08	4.09
Dodge City KS - Douglas AZ	RMB 521-A	13.32	10.32	7.33	(1) 4.63
		44.20	34.58	25.00	11.81
	Average Rate	14.73	11.53	8.33	3.94
1500 MILES					
Barstow CA - Denison IA	RMB 521-A	20.32	15.75	11.18	(1) 7.01
	Average Rate	20.32	15.75	11.18	(1) 7.01

(1) Class 45 lowest rating published.

"TARIFF REFERENCES FOR CORRIDOR - AVERAGE RATES"

CORRIDOR 7
San Francisco CA - Dallas TX

City Pairs	Tariff	LTL 500 LBS Class 100	LTL 500 LBS Class 77½	LTL 500 LBS Class 55	T. L. 30,000 LBS Class 35
400 MILES					
Albuquerque NM - Childress TX	MWB 571-A	9.47	7.41	5.35	1.86
Phoenix AZ - Palmdale CA	RMB 301	11.07	9.40	7.74	(A) 3.94
		20.54	16.81	13.09	5.80
	Average Rate	10.27	8.41	6.55	2.90
800 MILES					
Phoenix, AZ - San Angelo TX	RMB 521-A	13.44	10.42	7.39	(B) 4.66
Greenville TX - Gallup NM	MWB 571-A	13.45	10.63	7.70	2.75
Gallup NM - Santa Maria CA	RMB 301	15.51	13.21	10.88	(A) 5.48
		42.40	34.25	25.97	12.89
	Average Rate	14.13	11.42	8.66	4.30
1500 MILES					
Dallas TX - Lost Hills CA	RMB 521-A	18.22	14.12	10.02	(B) 6.30
	Average Rate	18.22	14.12	10.02	(B) 6.30

(A) CLASS 40

(B) CLASS 45

"TARIFF REFERENCES FOR CORRIDOR - AVERAGE RATES"

CORRIDOR 8
Los Angeles CA - Seattle WA

City Pairs	Tariff	LTL 500 LBS Class 100	LTL 500 LBS Class 77½	LTL 500 LBS Class 55	T. L. 30,000 LBS Class 35
400 MILES					
Los Angeles - San Francisco CA	WMT 111	8.66	7.36	2.96	1.69
Eugene OR - Wenatchee WA	RMB 308	11.60	9.80	6.93	3.16
San Francisco CA - Grants Pass OR	RMB 329-A	9.73	7.54	5.35	2.42
		29.99	24.70	15.24	7.27
	Average Rate	10.00	8.23	5.08	2.42
800 MILES					
Fresno CA - Kelso WA	RMB 329-A	13.09	10.14	7.20	3.25
	Average Rate	13.09	10.14	7.20	3.25

1500 Miles (1)

(1) 1500 Miles not applicable in this Corridor

COMPARISON OF REVENUE PER TON-MILE FOR EIGHT CORRIDORS

Mileage		Boston/ Miami Corridor 1	Rank	St. Paul/ Boston Corridor 2	Rank	St. Paul/ Miami Corridor 3	Rank	Chicago/ Dallas Corridor 4	Rank	St. Paul/ Seattle Corridor 5	Rank	Chicago/ Los Angeles Corridor 6	Rank	San Francisco/ Dallas Corridor 7	Rank	Seattle/ Los Angeles Corridor 8	Rank
	CLASS 100																
400	Rate	8.54		9.51		8.75		9.06		10.63		10.50		10.27		10.00	
	Revenue	42.70	1	47.55	3	43.75	4	45.30	2	53.15	8	52.50	7	51.35	6	50.00	5
	Revenue Per Ton Mile	.427		.476		.488		.453		.532		.525		.514		.500	
800	Rate	11.62		13.18		12.53		12.56		13.76		14.73		14.13		13.09	
	Revenue	58.10	1	65.90	5	62.65	2	62.80	3	68.80	6	73.65	8	70.65	7	65.45	4
	Revenue Per Ton Mile	.291		.330		.313		.314		.344		.368		.353		.327	
1500	Rate	16.95		17.14		18.00		18.88		17.54		20.32		18.22		(1)	
	Revenue	84.75	1	85.70	2	90.00	3	94.40	5	87.70	6	101.60	7	91.10	4		--
	Revenue Per Ton Mile	.226		.229		.240		.252		.234		.271		.243			
	CLASS 77 1/2																
400	Rate	6.77		7.65		7.05		7.20		8.37		8.26		8.41		8.23	
	Revenue	33.85	1	38.25	4	35.25	2	36.00	3	41.85	7	41.30	6	42.05	8	41.15	5
	Revenue Per Ton Mile	.339		.383		.353		.360		.419		.413		.421		.412	
800	Rate	9.18		10.48		9.95		9.86		10.66		11.53		11.42		10.14	
	Revenue	45.90	1	52.40	5	49.75	3	49.30	2	53.30	6	57.65	8	57.10	7	50.70	4
	Revenue Per Ton Mile	.230		.262		.249		.247		.267		.288		.286		.254	
1500	Rate	13.18		13.43		14.09		14.89		13.59		15.75		14.12		(1)	
	Revenue	65.90	1	67.15	2	70.45	3	74.45	4	67.95	5	78.75	6	70.60	3		--
	Revenue Per	.176		.179		.188		.199		.181		.210		.188			

(1) 1500 miles not applicable in this corridor

COMPARISON OF REVENUE PER TON-MILE FOR EIGHT CORRIDORS

Mileage		Corridor 1	Rank	Corridor 2	Rank	Corridor 3	Rank	Corridor 4	Rank	Corridor 5	Rank	Corridor 6	Rank	Corridor 7	Rank	Corridor 8	Rank
	CLASS 55																
400	Rate	4.98		5.73		5.33		5.32		6.07		6.00		6.55		5.08	
	Revenue Per	24.90	1	28.65	5	26.65	4	26.60	3	30.35	7	30.00	6	32.75	8	25.40	2
	Revenue Per Ton Mile	.249		.287		.267		.266		.304		.300		.328		.254	
800	Rate	6.68		7.74		7.37		7.08		7.57		8.33		8.66		7.20	
	Revenue	33.40	1	38.70	6	36.85	4	35.40	2	37.85	5	41.65	7	43.30	8	36.00	3
	Revenue Per Ton Mile	.167		.194		.184		.177		.189		.208		.217		.180	
1500	Rate	9.33		9.63		10.19		10.86		9.65		11.18		10.02		(1)	
	Revenue	46.65	1	48.15	2	50.95	4	54.30	5	48.25	6	55.90	7	50.10	3		--
	Revenue Per Ton Mile	.124		.128		.136		.145		.129		.149		.134			
	CLASS 35 30M LBS.																
400	Rate	1.86		1.92		1.77		1.86		2.81		2.54		2.90		2.42	
	Revenue	558.00	2	576.00	3	531.00	1	558.00	2	843.00	6	762.00	5	870.00	7	726.00	4
	Revenue Per Ton Mile	.093		.096		.089		.093		.141		.127		.145		.121	
800	Rate	2.70		2.88		2.84		3.23		4.27		3.94		4.30		2.25	
	Revenue	810.00	1	864.00	3	852.00	2	969.00	4	1281.00	6	1182.00	5	1290.00	7	975.00	
	Revenue Per Ton Mile	.068		.072		.071		.081		.107		.099		.108		.081	4
1500	Rate	4.64		4.94		5.69		6.13		6.07		7.01		6.30		(1)	
	Revenue	1392.00	1	1482.00	2	1707.00	3	1839.00	4	1821.00	6	2103.00	7	1890.00	5		--
	Revenue Per Ton Mile	.062		.066		.076		.082		.081		.093		.084			
	Rank Totals		13		42				35		39		74		73		31*

(1) 1500 Miles not applicable in this corridor

* Weighted Average

Appendix A-3

MOTOR CARRIER WEIGHT BREAKS BY BUREAU

	LESS - THAN - TRUCKLOAD										TRUCKLOAD (000)			
TARIFF BUREAU	0	500	1000	2000	5000	6000	10000	12000	15000	20000	24	28	30	36
NEW ENGLAND	X	X		X		X		X		X		X		X
MIDDLE ATLANTIC	X	X	X	X	X						X		X	
SOUTHERN MOTOR	X	X	X	X	X		X				X		X	
CENTRAL & SOUTHERN	X	X	X	X	X		X				X			
CENTRAL STATES	X	X	X	X	X		X		X					
EASTERN CENTRAL	X	X	X	X	X		X		X					
MIDDLEWEST	X	X	X	X	X		X				X			
ROCKY MOUNTAIN	X	X	X	X	X		X			X	X*			
WESTERN MOTOR	X				X		X			X				
PACIFIC INLAND	X		X	X	X		X			X				

* Rocky Mountain has dual truckload minimums. On those tariffs covering movements from the East to West, the minimums are 20,000 LTL on 24 TL. On those tariffs covering rates between Rocky Mountains and points West, the minimums are 20,000 LTL and 40,000 TL.

MAPS OF MOTOR TARIFF BUREAUS

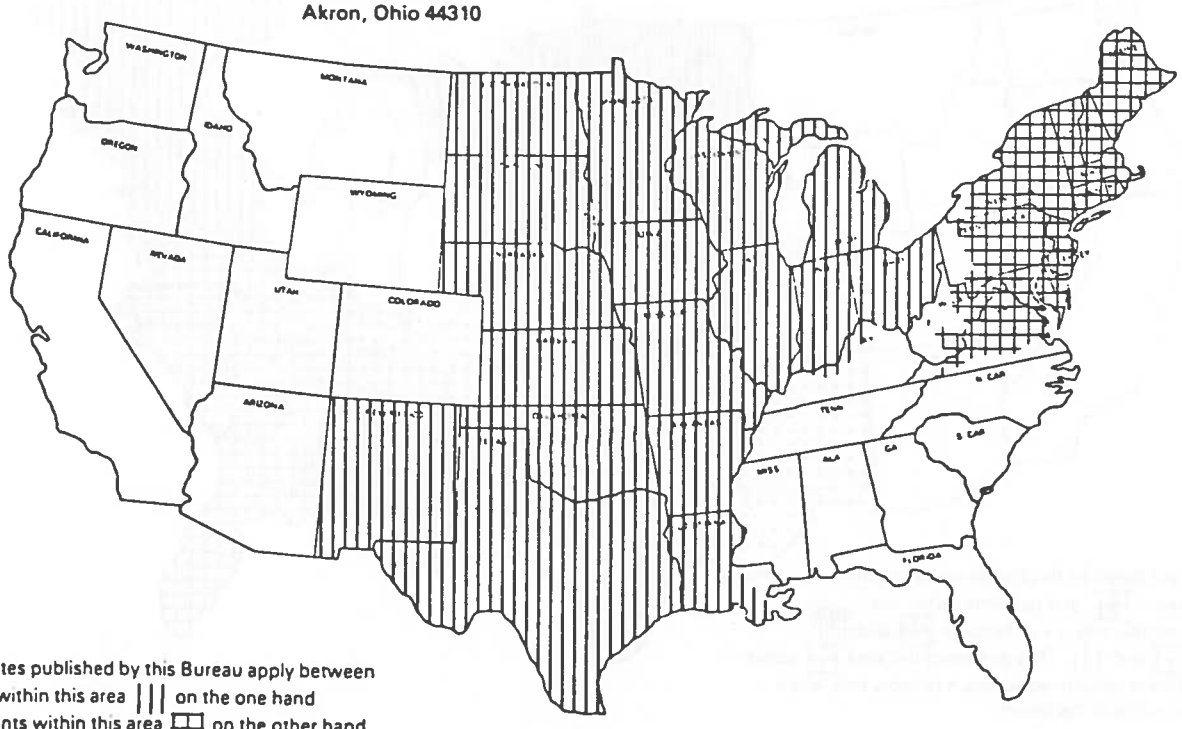
WESTERN MOTOR TARIFF BUREAU, INC.

P.O. Box 392
South Gate, Cal. 90280

Thru rates published by the Western Motor Tariff Bureau, Inc. apply between points within this area

THE EASTERN CENTRAL MOTOR CARRIERS ASSOCIATION, INC.

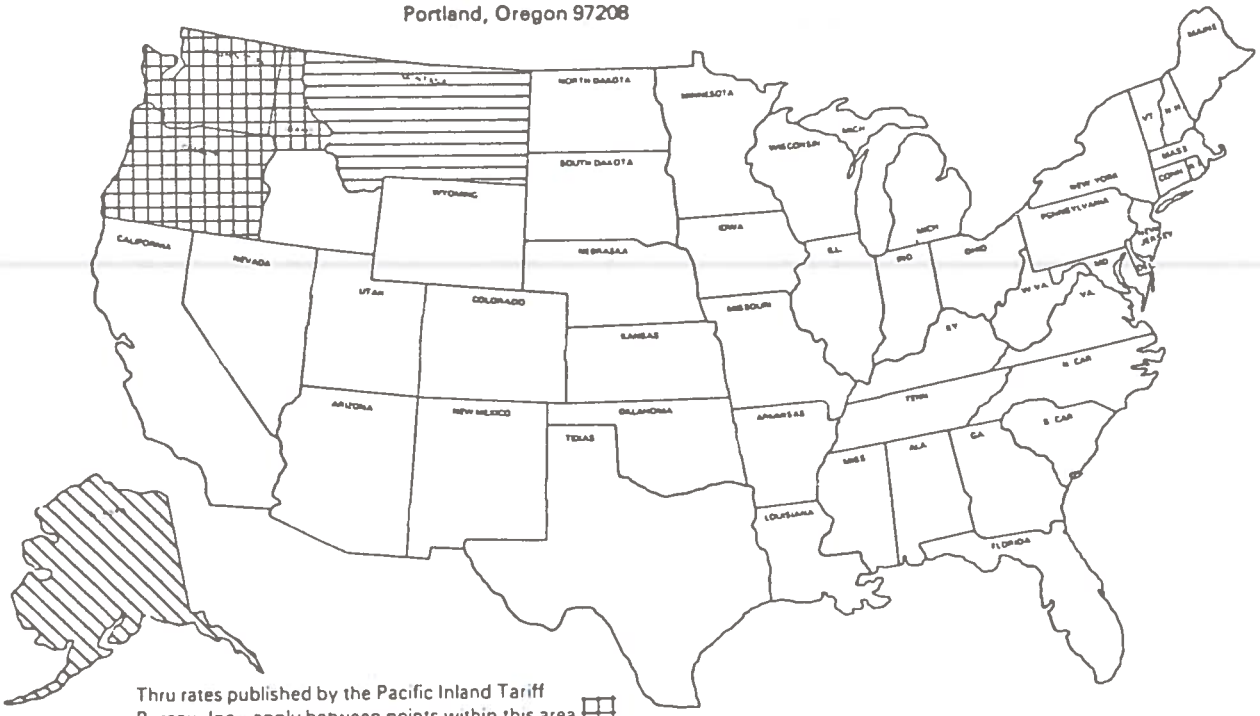
P.O. Box 3600
Akron, Ohio 44310



Thru rates published by this Bureau apply between points within this area on the one hand and points within this area on the other hand.

PACIFIC INLAND TARIFF BUREAU

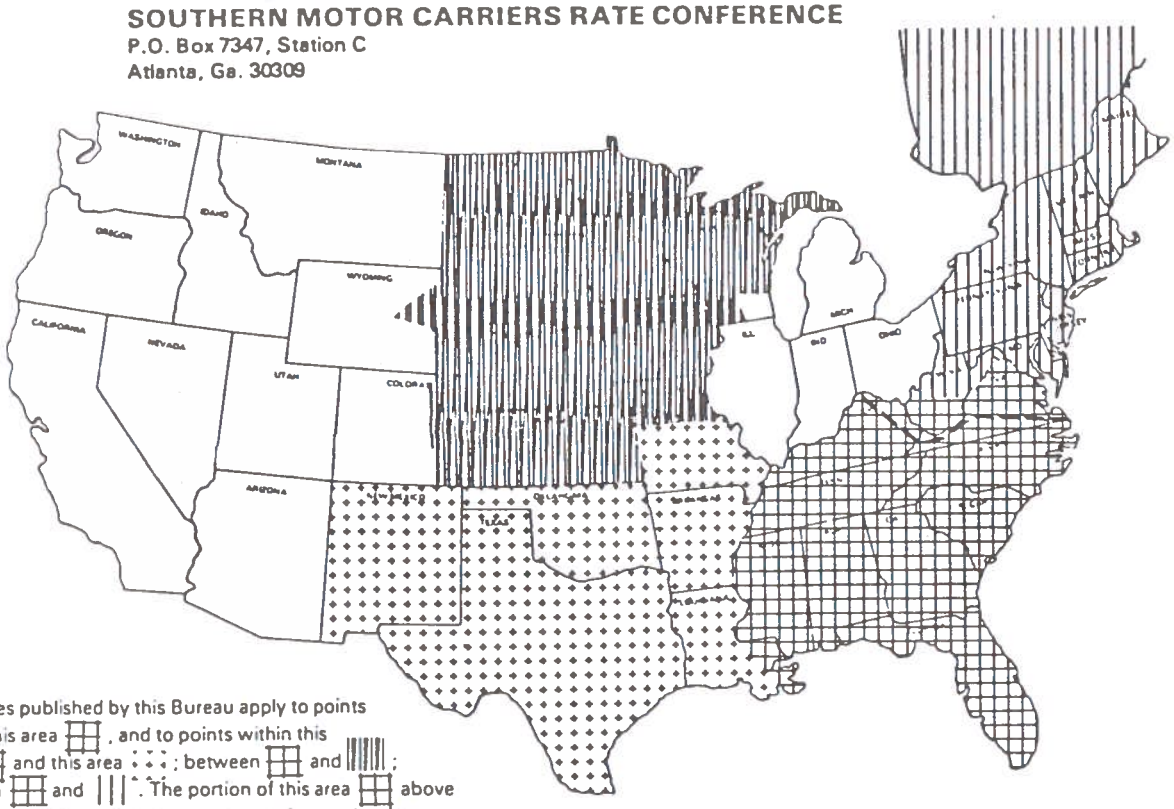
P.O. Box 4131
Portland, Oregon 97208



Thru rates published by the Pacific Inland Tariff Bureau, Inc., apply between points within this area ⊞ AND between points within this area ⊞ on the one hand and points in this area ⫽ on the other hand. Also between points within this area ═

SOUTHERN MOTOR CARRIERS RATE CONFERENCE

P.O. Box 7347, Station C
Atlanta, Ga. 30309



Thru rates published by this Bureau apply to points within this area ⊞, and to points within this area ⊞ and this area ⋮⋮; between ⊞ and ⫼; between ⊞ and ⫼. The portion of this area ⊞ above the dotted line is considered southern territory only when to and from points in the South.

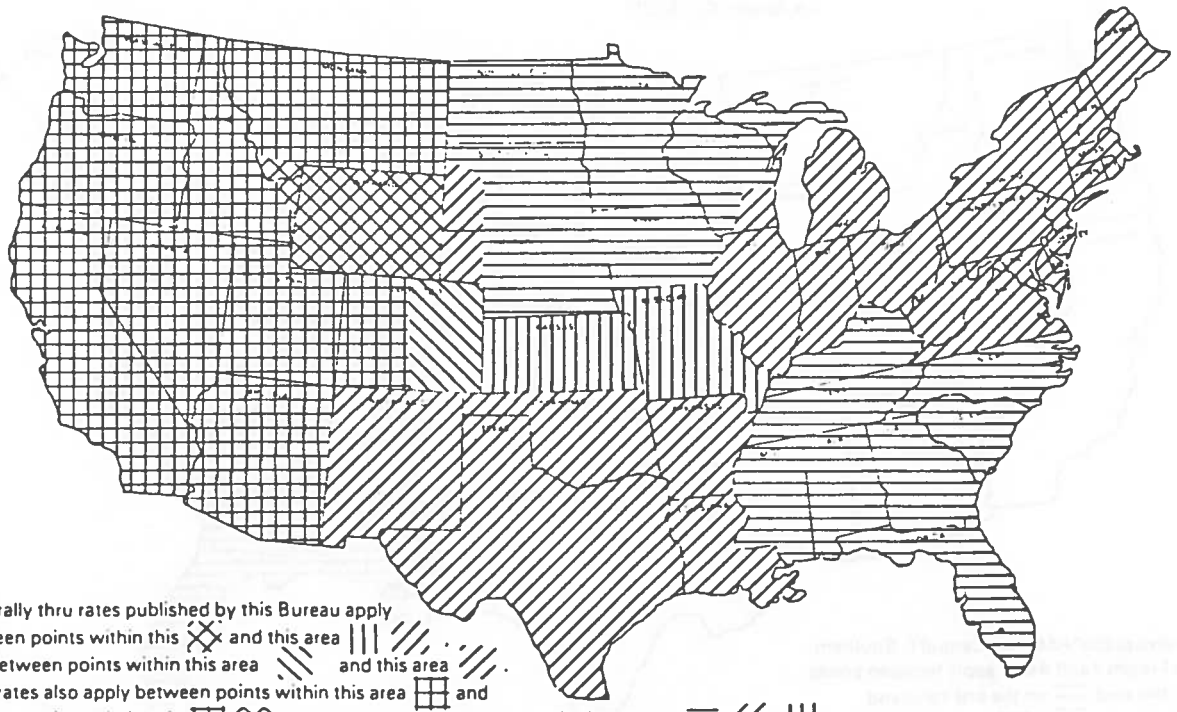
MIDDLE ATLANTIC CONFERENCE

P.O. Box 10213
Washington, D.C. 20018

Thru rates published by the Middle Atlantic Conference apply between points within this area ||| AND between points within this area ||| on the one hand and points within this area ⊞ on the other hand.

ROCKY MOUNTAIN MOTOR TARIFF BUREAU, INC.

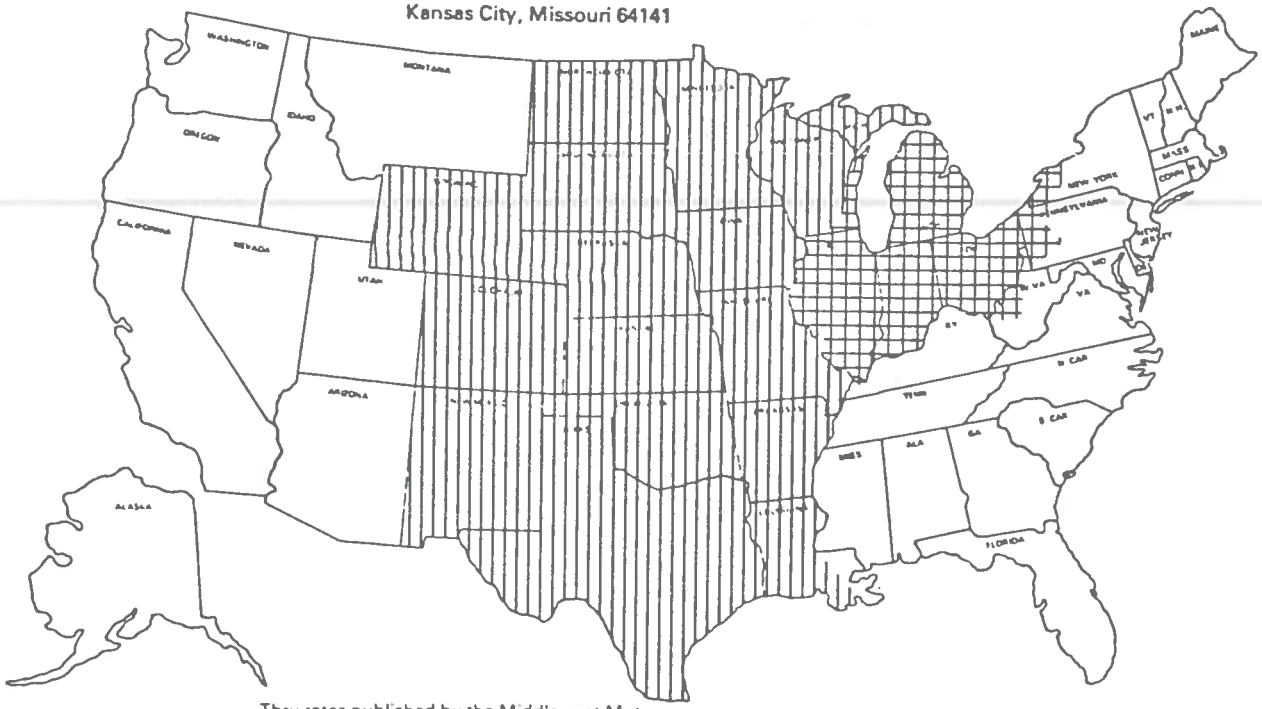
P.O. Box 5746, Terminal Annex
Denver, Colo. 80217



Generally thru rates published by this Bureau apply between points within this ⊠ and this area ||| and between points within this area ⧄ and this area ⧅. Thru rates also apply between points within this area ⊞ and between points within this ⊞ ⊠ on the one hand and points within these areas ☰ ⧄ ||| on the other hand.

MIDDLEWEST MOTOR FREIGHT BUREAU

P.O. Drawer 647
Kansas City, Missouri 64141



Thru rates published by the Middlewest Motor Freight Bureau apply between points within this area ||| AND between points within this area ||| on the one hand and points within this area ⊞ on the other hand; ALSO between Alaska and Central Canada and points in boths these ⊞|||

CENTRAL AND SOUTHERN MOTOR FREIGHT TARIFF ASSOCIATION, INC.

P.O. Box 21339
Louisville, Ky. 40221

Thru rates published by the Central & Southern Motor Freight Tariff Assn. apply between points within this area ═ on the one hand and points within this area ⊞ on the other hand.

THE NEW ENGLAND MOTOR RATE BUREAU, INC.

14 New England Executive Park
Burlington, Mass. 01803

Thru rates published by the New England Motor Rate Bureau, Inc. apply between points within this area

CENTRAL STATES MOTOR FREIGHT BUREAU, INC.

5440 S. Cicero Avenue
Chicago, Ill. 60638

Thru rates published by the Central States Motor Freight Bureau, Inc. apply between points within this area .

TRAFFIC DATA SYSTEMS F A C T S REPORT SERIES (5) JULY TRANSIT REPORT REPORT 1 FOR 08/13/79 PAGE 9

FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH C/CWT	CURRENT MONTH WEIGHT	CURRENT MONTH ITEMS	CURRENT MONTH AVG/WT	CURRENT MONTH CHARGES	YEAR TO DATE C/CWT	YEAR TO DATE WEIGHT	YEAR TO DATE ITEMS	YEAR TO DATE AVG/WT	YEAR TO DATE CHARGES
STATE	CITY	CARRIER											
CONNECTICUT	HARTFORD		*	9.44	3173	3	1057	299.79	9.44	3173	3	1057	299.79
				AVERAGE TRANSIT TIME 2.33 DAYS					AVERAGE TRANSIT TIME 2.33 DAYS				
CONNECTICUT	HARTFORD		**	9.44	3173	3	1057	299.79	9.44	3173	3	1057	299.79
				AVERAGE TRANSIT TIME 2.33 DAYS					AVERAGE TRANSIT TIME 2.33 DAYS				
CONNECTICUT	NEW HAVEN		*	21.00	120	1	120	25.21	21.00	120	1	120	25.21
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
CONNECTICUT	NEW HAVEN		*	11.66	3796	6	632	442.95	11.66	3796	6	632	442.95
				AVERAGE TRANSIT TIME 2.33 DAYS					AVERAGE TRANSIT TIME 2.33 DAYS				
CONNECTICUT	NEW HAVEN		**	11.95	3916	7	559	468.16	11.95	3916	7	559	468.16
				AVERAGE TRANSIT TIME 2.28 DAYS					AVERAGE TRANSIT TIME 2.28 DAYS				
CONNECTICUT	NEW LONDON		*	18.08	112	1	112	20.25	18.08	112	1	112	20.25
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
CONNECTICUT	NEW LONDON		**	18.08	112	1	112	20.25	18.08	112	1	112	20.25
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
CONNECTICUT	STAMFORD		*	13.45	301	2	150	40.50	13.45	301	2	150	40.50
				AVERAGE TRANSIT TIME 2.50 DAYS					AVERAGE TRANSIT TIME 2.50 DAYS				
CONNECTICUT	STAMFORD		*	13.17	224	1	224	29.52	13.17	224	1	224	29.52
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
CONNECTICUT	STAMFORD		**	13.33	525	3	175	70.02	13.33	525	3	175	70.02
				AVERAGE TRANSIT TIME 2.33 DAYS					AVERAGE TRANSIT TIME 2.33 DAYS				
CONNECTICUT	WILLIMANTIC		*	8.43	5931	9	659	500.15	8.43	5931	9	659	500.15
				AVERAGE TRANSIT TIME 2.11 DAYS					AVERAGE TRANSIT TIME 2.11 DAYS				
CONNECTICUT	WILLIMANTIC		**	8.43	5931	9	659	500.15	8.43	5931	9	659	500.15
				AVERAGE TRANSIT TIME 2.11 DAYS					AVERAGE TRANSIT TIME 2.11 DAYS				
CONNECTICUT			***	9.94	13657	23	593	1358.37	9.94	13657	23	593	1358.37
				AVERAGE TRANSIT TIME 2.21 DAYS					AVERAGE TRANSIT TIME 2.21 DAYS				

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHAR
FLORIDA	MIAMI		*	.00	0	4	0	412.26		0	4	0	412
				AVERAGE TRANSIT TIME 8.25 DAYS					AVERAGE TRANSIT TIME 8.25 DAYS				
FLORIDA	MIAMI		*	165.66	15	1	15	24.85	165.66	15	1	15	24
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
FLORIDA	MIAMI		*	22.19	197	1	197	43.72	22.19	197	1	197	43
				AVERAGE TRANSIT TIME 6.00 DAYS					AVERAGE TRANSIT TIME 6.00 DAYS				
FLORIDA	MIAMI		*	25.16	1298	5	259	326.70	25.16	1298	5	259	326
				AVERAGE TRANSIT TIME 4.20 DAYS					AVERAGE TRANSIT TIME 4.20 DAYS				
FLORIDA	MIAMI		*	2.76	25000	1	25000	690.00	2.76	25000	1	25000	690
				AVERAGE TRANSIT TIME 6.00 DAYS					AVERAGE TRANSIT TIME 6.00 DAYS				
FLORIDA	MIAMI		**	5.64	26510	12	2209	1497.53	5.64	26510	12	2209	1497
				AVERAGE TRANSIT TIME 5.66 DAYS					AVERAGE TRANSIT TIME 5.66 DAYS				
FLORIDA	TAMPA		*	10.65	2374	1	2374	252.85	10.65	2374	1	2374	252
				AVERAGE TRANSIT TIME 4.00 DAYS					AVERAGE TRANSIT TIME 4.00 DAYS				
FLORIDA	TAMPA		**	10.65	2374	1	2374	252.85	10.65	2374	1	2374	252
				AVERAGE TRANSIT TIME 4.00 DAYS					AVERAGE TRANSIT TIME 4.00 DAYS				
FLORIDA			***	6.06	28884	13	2221	1750.38	6.06	28884	13	2221	1750.
				AVERAGE TRANSIT TIME 5.53 DAYS					AVERAGE TRANSIT TIME 5.53 DAYS				

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
GEORGIA	ALBANY		*	25.81	238	2	119	61.45	25.81	238	2	119	61.45
				AVERAGE TRANSIT TIME 6.00 DAYS					AVERAGE TRANSIT TIME 6.00 DAYS				
GEORGIA	ALBANY		*	12.29	1073	1	1073	131.91	12.29	1073	1	1073	131.91
				AVERAGE TRANSIT TIME 4.00 DAYS					AVERAGE TRANSIT TIME 4.00 DAYS				
GEORGIA	ALBANY		**	14.74	1311	3	437	193.36	14.74	1311	3	437	193.36
				AVERAGE TRANSIT TIME 5.33 DAYS					AVERAGE TRANSIT TIME 5.33 DAYS				
GEORGIA	ATHENS		*	16.99	442	4	110	75.10	16.99	442	4	110	75.10
				AVERAGE TRANSIT TIME 4.50 DAYS					AVERAGE TRANSIT TIME 4.50 DAYS				
GEORGIA	ATHENS		**	16.99	442	4	110	75.10	16.99	442	4	110	75.10
				AVERAGE TRANSIT TIME 4.50 DAYS					AVERAGE TRANSIT TIME 4.50 DAYS				
GEORGIA	ATLANTA		*	.00	0	4	0	147.56		0	4	0	147.56
				AVERAGE TRANSIT TIME 2.50 DAYS					AVERAGE TRANSIT TIME 2.50 DAYS				
GEORGIA	ATLANTA		*	9.69	12685	16	792	1229.90	9.69	12685	16	792	1229.90
				AVERAGE TRANSIT TIME 4.12 DAYS					AVERAGE TRANSIT TIME 4.12 DAYS				
GEORGIA	ATLANTA		*	12.45	250	1	250	31.14	12.45	250	1	250	31.14
				AVERAGE TRANSIT TIME 4.00 DAYS					AVERAGE TRANSIT TIME 4.00 DAYS				
GEORGIA	ATLANTA		*	11.64	198	1	198	23.05	11.64	198	1	198	23.05
				AVERAGE TRANSIT TIME 8.00 DAYS					AVERAGE TRANSIT TIME 8.00 DAYS				
GEORGIA	ATLANTA		**	10.90	13133	22	596	1431.65	10.90	13133	22	596	1431.65
				AVERAGE TRANSIT TIME 4.00 DAYS					AVERAGE TRANSIT TIME 4.00 DAYS				
GEORGIA	DALTON		*	12.24	273	1	273	33.42	12.24	273	1	273	33.42
				AVERAGE TRANSIT TIME 3.00 DAYS					AVERAGE TRANSIT TIME 3.00 DAYS				
GEORGIA	DALTON		*	11.16	4783	12	398	534.16	11.16	4783	12	398	534.16
				AVERAGE TRANSIT TIME 3.41 DAYS					AVERAGE TRANSIT TIME 3.41 DAYS				
GEORGIA	DALTON		**	11.22	5056	13	388	567.58	11.22	5056	13	388	567.58
				AVERAGE TRANSIT TIME 3.38 DAYS					AVERAGE TRANSIT TIME 3.38 DAYS				
GEORGIA	WAYCROSS		*	.00	0	1	0	66.55		0	1	0	66.55
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
GEORGIA	WAYCROSS		**	.00	0	1	0	66.55		0	1	0	66.55

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
GEORGIA			***	11.70	19942	43	463	2334.24	11.70	19942	43	463	2334.24
				AVERAGE TRANSIT TIME 3.90 DAYS					AVERAGE TRANSIT TIME 3.90 DAYS				

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
ILLINOIS	AURORA		*	.00	0	2	0	229.70		0	2	0	229.70
				AVERAGE TRANSIT TIME 6.00 DAYS					AVERAGE TRANSIT TIME 6.00 DAYS				
ILLINOIS	AURORA		**	.00	0	2	0	229.70		0	2	0	229.70
				AVERAGE TRANSIT TIME 6.00 DAYS					AVERAGE TRANSIT TIME 6.00 DAYS				
ILLINOIS	CHICAGO		*	210.22	100	2	50	210.22	210.22	100	2	50	210.22
				AVERAGE TRANSIT TIME 6.00 DAYS					AVERAGE TRANSIT TIME 6.00 DAYS				
ILLINOIS	CHICAGO		**	210.22	100	2	50	210.22	210.22	100	2	50	210.22
				AVERAGE TRANSIT TIME 6.00 DAYS					AVERAGE TRANSIT TIME 6.00 DAYS				
ILLINOIS	ELGIN		*	34.43	78	1	78	26.86	34.43	78	1	78	26.86
				AVERAGE TRANSIT TIME 7.00 DAYS					AVERAGE TRANSIT TIME 7.00 DAYS				
ILLINOIS	ELGIN		**	34.43	78	1	78	26.86	34.43	78	1	78	26.86
				AVERAGE TRANSIT TIME 7.00 DAYS					AVERAGE TRANSIT TIME 7.00 DAYS				
ILLINOIS	WAUKEGAN		*	1265.52	90	4	22	1138.97	1265.52	90	4	22	1138.97
				AVERAGE TRANSIT TIME 3.75 DAYS					AVERAGE TRANSIT TIME 3.75 DAYS				
ILLINOIS	WAUKEGAN		**	1265.52	90	4	22	1138.97	1265.52	90	4	22	1138.97
				AVERAGE TRANSIT TIME 3.75 DAYS					AVERAGE TRANSIT TIME 3.75 DAYS				
ILLINOIS			***	599.16	268	9	29	1605.75	599.16	268	9	29	1605.75
				AVERAGE TRANSIT TIME 5.11 DAYS					AVERAGE TRANSIT TIME 5.11 DAYS				

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
INDIANA	COLUMBUS		*	11.60	530	1	530	61.53	11.60	530	1	530	61.53
				AVERAGE TRANSIT TIME 3.00 DAYS					AVERAGE TRANSIT TIME 3.00 DAYS				
INDIANA	COLUMBUS		*	.00	0	1	0	331.90		0	1	0	331.90
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
INDIANA	COLUMBUS		**	74.23	530	2	265	393.43	74.23	530	2	265	393.43
				AVERAGE TRANSIT TIME 2.50 DAYS					AVERAGE TRANSIT TIME 2.50 DAYS				
INDIANA	INDIANAPOLI		*	12.34	3758	10	375	463.85	12.34	3758	10	375	463.85
				AVERAGE TRANSIT TIME 3.50 DAYS					AVERAGE TRANSIT TIME 3.50 DAYS				
INDIANA	INDIANAPOLI		**	12.34	3758	10	375	463.85	12.34	3758	10	375	463.85
				AVERAGE TRANSIT TIME 3.50 DAYS					AVERAGE TRANSIT TIME 3.50 DAYS				
INDIANA	KOKOMO		*	34.42	647	2	323	222.71	34.42	647	2	323	222.71
				AVERAGE TRANSIT TIME 4.00 DAYS					AVERAGE TRANSIT TIME 4.00 DAYS				
INDIANA	KOKOMO		**	34.42	647	2	323	222.71	34.42	647	2	323	222.71
				AVERAGE TRANSIT TIME 4.00 DAYS					AVERAGE TRANSIT TIME 4.00 DAYS				
INDIANA	MUNCIE		*	33.48	60	1	60	20.09	33.48	60	1	60	20.09
				AVERAGE TRANSIT TIME 4.00 DAYS					AVERAGE TRANSIT TIME 4.00 DAYS				
INDIANA	MUNCIE		**	33.48	60	1	60	20.09	33.48	60	1	60	20.09
				AVERAGE TRANSIT TIME 4.00 DAYS					AVERAGE TRANSIT TIME 4.00 DAYS				
INDIANA			***	22.02	4995	15	333	1100.08	22.02	4995	15	333	1100.08
				AVERAGE TRANSIT TIME 3.46 DAYS					AVERAGE TRANSIT TIME 3.46 DAYS				

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
MAINE	AUBURN		*	15.82	1084	3	361	171.54	15.82	1084	3	361	171.54
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
MAINE	AUBURN		*	11.49	4820	3	1606	553.99	11.49	4820	3	1606	553.99
				AVERAGE TRANSIT TIME 2.66 DAYS					AVERAGE TRANSIT TIME 2.66 DAYS				
MAINE	AUBURN		**	12.28	5904	6	984	725.53	12.28	5904	6	984	725.53
				AVERAGE TRANSIT TIME 2.33 DAYS					AVERAGE TRANSIT TIME 2.33 DAYS				
MAINE	PORTLAND		*	56.49	308	2	154	174.01	56.49	308	2	154	174.01
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
MAINE	PORTLAND		**	56.49	308	2	154	174.01	56.49	308	2	154	174.01
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
MAINE	WATERVILLE		*	13.38	702	1	702	93.93	13.38	702	1	702	93.93
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
MAINE	WATERVILLE		*	13.25	1732	3	577	229.58	13.25	1732	3	577	229.58
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
MAINE	WATERVILLE		**	13.29	2434	4	608	323.51	13.29	2434	4	608	323.51
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
MAINE			***	14.14	8646	12	720	1223.05	14.14	8646	12	720	1223.05
				AVERAGE TRANSIT TIME 2.16 DAYS					AVERAGE TRANSIT TIME 2.16 DAYS				

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
MASS.	BOSTON		*	40.09	120	1	120	48.11	40.09	120	1	120	48.11
				AVERAGE TRANSIT TIME 3.00 DAYS					AVERAGE TRANSIT TIME 3.00 DAYS				
MASS.	BOSTON		*	10.80	2598	4	649	280.81	10.80	2598	4	649	280.81
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
MASS.	BOSTON		*	10.68	2252	4	563	240.52	10.68	2252	4	563	240.52
				AVERAGE TRANSIT TIME 2.50 DAYS					AVERAGE TRANSIT TIME 2.50 DAYS				
MASS.	BOSTON		**	11.45	4970	9	552	569.44	11.45	4970	9	552	569.44
				AVERAGE TRANSIT TIME 2.33 DAYS					AVERAGE TRANSIT TIME 2.33 DAYS				
MASS.	BROCKTON		*	15.83	200	1	200	31.67	15.83	200	1	200	31.67
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
MASS.	BROCKTON		**	15.83	200	1	200	31.67	15.83	200	1	200	31.67
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
MASS.	PITTSFIELD		*	.00	0	0	0	0.00	6.20	673	1	673	41.73
				AVERAGE TRANSIT TIME DAYS					AVERAGE TRANSIT TIME 3.00 DAYS				
MASS.	PITTSFIELD		*	24.38	171	2	85	41.70	12.65	15963	40	399	2020.18
				AVERAGE TRANSIT TIME 2.50 DAYS					AVERAGE TRANSIT TIME 2.57 DAYS				
MASS.	PITTSFIELD		**	24.38	171	2	85	41.70	12.39	16636	41	405	2061.91
				AVERAGE TRANSIT TIME 2.50 DAYS					AVERAGE TRANSIT TIME 2.58 DAYS				
MASS.	SPRINGFIELD		*	15.68	247	1	247	38.73	15.68	247	1	247	38.73
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
MASS.	SPRINGFIELD		*	.00	0	0	0	0.00	12.34	1789	4	447	220.85
				AVERAGE TRANSIT TIME DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
MASS.	SPRINGFIELD		**	15.68	247	1	247	38.73	12.74	2036	5	407	259.58
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
MASS.	TAUNTON		*	.00	0	0	0	0.00	14.77	1170	3	390	172.85
				AVERAGE TRANSIT TIME DAYS					AVERAGE TRANSIT TIME 3.00 DAYS				
MASS.	TAUNTON		*	.00	0	0	0	0.00		0	1	0	15.00
				AVERAGE TRANSIT TIME DAYS					AVERAGE TRANSIT TIME 4.00 DAYS				
MASS.	TAUNTON		*	14.86	1952	2	976	290.21	10.46	24578	20	1228	2571.90
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.60 DAYS				

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
MASS.	TAUNTON		*	12.56	3471	10	347	436.30	9.16	58437	69	846	5357.19
				AVERAGE TRANSIT TIME 2.10 DAYS					AVERAGE TRANSIT TIME 2.47 DAYS				
MASS.	TAUNTON		**	13.39	5423	12	451	726.51	9.64	84185	93	905	8116.94
				AVERAGE TRANSIT TIME 2.08 DAYS					AVERAGE TRANSIT TIME 2.53 DAYS				
MASS.	WOBURN		*	10.50	790	1	790	82.95	9.25	20296	19	1068	1878.17
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.26 DAYS				
MASS.	WOBURN		*	.00	0	0	0	0.00	8.15	159	1	159	12.97
				AVERAGE TRANSIT TIME DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
MASS.	WOBURN		*	.00	0	0	0	0.00	6.71	1379	2	689	92.61
				AVERAGE TRANSIT TIME DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
MASS.	WOBURN		*	8.47	2454	3	818	208.09	8.65	6666	14	476	577.14
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.50 DAYS				
MASS.	WOBURN		**	8.97	3244	4	811	291.04	8.98	28500	36	791	2560.89
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.33 DAYS				
MASS.	WORCESTER		*	10.82	884	1	884	95.72	11.16	3763	7	537	420.15
				AVERAGE TRANSIT TIME 3.00 DAYS					AVERAGE TRANSIT TIME 2.85 DAYS				
MASS.	WORCESTER		*	.00	0	0	0	0.00	21.25	460	1	460	97.75
				AVERAGE TRANSIT TIME DAYS					AVERAGE TRANSIT TIME 3.00 DAYS				
MASS.	WORCESTER		*	13.12	2150	3	716	282.28	12.73	14367	20	718	1829.11
				AVERAGE TRANSIT TIME 3.66 DAYS					AVERAGE TRANSIT TIME 3.00 DAYS				
MASS.	WORCESTER		**	12.45	3034	4	758	378.00	12.62	18590	28	663	2347.01
				AVERAGE TRANSIT TIME 3.50 DAYS					AVERAGE TRANSIT TIME 2.96 DAYS				
MASS.			***	12.01	17289	33	523	2077.09	10.28	155117	213	728	15947.44
				AVERAGE TRANSIT TIME 2.33 DAYS					AVERAGE TRANSIT TIME 2.54 DAYS				

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
MINNESOTA	BRAINERD		*	.00	0	0	0	0.00	9.45	1262	1	1262	119.26
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			5.00 DAYS	
MINNESOTA	BRAINERD		**	.00	0	0	0	0.00	9.45	1262	1	1262	119.26
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			5.00 DAYS	
MINNESOTA	MANKATO		*	9.93	463	1	463	46.00	9.28	1900	4	475	176.40
				AVERAGE TRANSIT TIME		6.00 DAYS			AVERAGE TRANSIT TIME			3.50 DAYS	
MINNESOTA	MANKATO		*	9.86	479	1	479	47.24	9.38	958	2	479	89.89
				AVERAGE TRANSIT TIME		5.00 DAYS			AVERAGE TRANSIT TIME			6.50 DAYS	
MINNESOTA	MANKATO		**	9.89	942	2	471	93.24	9.31	2858	6	476	266.29
				AVERAGE TRANSIT TIME		5.50 DAYS			AVERAGE TRANSIT TIME			4.50 DAYS	
MINNESOTA	MINNEAPOLIS		*	.00	0	0	0	0.00	8.25	2936	3	978	242.26
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			6.00 DAYS	
MINNESOTA	MINNEAPOLIS		*	.00	0	0	0	0.00	8.09	2622	2	1311	212.14
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			5.50 DAYS	
MINNESOTA	MINNEAPOLIS		*	.00	0	0	0	0.00	11.31	1014	1	1014	114.78
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
MINNESOTA	MINNEAPOLIS		*	.00	0	0	0	0.00	16.99	896	2	448	152.30
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			8.00 DAYS	
MINNESOTA	MINNEAPOLIS		*	.00	0	0	0	0.00	12.65	540	1	540	68.31
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			5.00 DAYS	
MINNESOTA	MINNEAPOLIS		*	8.71	1886	1	1886	164.32	8.71	1886	1	1886	164.32
				AVERAGE TRANSIT TIME		8.00 DAYS			AVERAGE TRANSIT TIME			8.00 DAYS	
MINNESOTA	MINNEAPOLIS		**	8.71	1886	1	1886	164.32	9.64	9894	10	989	954.11
				AVERAGE TRANSIT TIME		8.00 DAYS			AVERAGE TRANSIT TIME			6.00 DAYS	
MINNESOTA	ROCHESTER		*	.00	0	0	0	0.00	11.83	3876	1	3876	458.58
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
MINNESOTA	ROCHESTER		**	.00	0	0	0	0.00	11.83	3876	1	3876	458.58
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
MINNESOTA	SAINT PAUL		*	48.07	602	2	301	289.44	20.18	4326	5	865	873.01
				AVERAGE TRANSIT TIME		4.50 DAYS			AVERAGE TRANSIT TIME			4.20 DAYS	

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
MINNESOTA	SAINT PAUL		**	48.07	602	2	301	289.44	20.18	4326	5	865	873.01
				AVERAGE TRANSIT TIME 4.50 DAYS					AVERAGE TRANSIT TIME 4.20 DAYS				
MINNESOTA			***	15.94	3430	5	686	547.00	12.02	22216	23	965	2671.25
				AVERAGE TRANSIT TIME 5.60 DAYS					AVERAGE TRANSIT TIME 5.04 DAYS				

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
NEW HAMPSHI	CONCORD		*	.00	0	0	0	0.00	14.39	2034	4	508	292.89
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.75 DAYS	
NEW HAMPSHI	CONCORD		**	.00	0	0	0	0.00	14.39	2034	4	508	292.89
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.75 DAYS	
NEW HAMPSHI	KEENE		*	.00	0	0	0	0.00	14.74	700	2	350	103.22
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
NEW HAMPSHI	KEENE		**	.00	0	0	0	0.00	14.74	700	2	350	103.22
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
NEW HAMPSHI	MANCHESTER		*	10.63	5206	3	1735	553.82	10.99	10741	12	895	1180.69
				AVERAGE TRANSIT TIME			3.33 DAYS		AVERAGE TRANSIT TIME			2.66 DAYS	
NEW HAMPSHI	MANCHESTER		*	14.70	291	1	291	42.79	12.50	4038	10	403	504.80
				AVERAGE TRANSIT TIME			4.00 DAYS		AVERAGE TRANSIT TIME			2.50 DAYS	
NEW HAMPSHI	MANCHESTER		**	10.85	5497	4	1374	596.61	11.40	14779	22	671	1685.49
				AVERAGE TRANSIT TIME			3.50 DAYS		AVERAGE TRANSIT TIME			2.59 DAYS	
NEW HAMPSHI	PORTSMOUTH		*	.00	0	0	0	0.00	7.37	6800	1	6800	501.80
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			5.00 DAYS	
NEW HAMPSHI	PORTSMOUTH		*	9.00	4312	3	1437	388.45	9.75	13625	12	1135	1329.74
				AVERAGE TRANSIT TIME			2.00 DAYS		AVERAGE TRANSIT TIME			3.16 DAYS	
NEW HAMPSHI	PORTSMOUTH		**	9.00	4312	3	1437	388.45	8.96	20425	13	1571	1831.54
				AVERAGE TRANSIT TIME			2.00 DAYS		AVERAGE TRANSIT TIME			3.30 DAYS	
NEW HAMPSHI			***	10.04	9809	7	1401	985.06	10.31	37938	41	925	3913.14
				AVERAGE TRANSIT TIME			2.85 DAYS		AVERAGE TRANSIT TIME			2.80 DAYS	

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
NORTH CAROL	ASHEVILLE		*	.00	0	0	0	0.00	4.65	34471	3	11490	1603.61
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
NORTH CAROL	ASHEVILLE		*	4.86	10531	4	2632	512.75	5.67	39689	16	2480	2251.17
				AVERAGE TRANSIT TIME		3.50 DAYS			AVERAGE TRANSIT TIME			1.93 DAYS	
NORTH CAROL	ASHEVILLE		*	.00	0	0	0	0.00	15.70	610	1	610	95.83
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
NORTH CAROL	ASHEVILLE		*	99.72	210	3	70	209.43	29.18	940	5	188	274.31
				AVERAGE TRANSIT TIME		5.66 DAYS			AVERAGE TRANSIT TIME			4.40 DAYS	
NORTH CAROL	ASHEVILLE		*	.00	0	0	0	0.00	11.25	3791	1	3791	426.49
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			6.00 DAYS	
NORTH CAROL	ASHEVILLE		*	.00	0	0	0	0.00	30.20	72	1	72	21.75
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
NORTH CAROL	ASHEVILLE		*	.00	0	0	0	0.00	9.76	169	1	169	16.50
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
NORTH CAROL	ASHEVILLE		**	6.72	10741	7	1534	722.18	5.88	79742	28	2847	4689.66
				AVERAGE TRANSIT TIME		4.42 DAYS			AVERAGE TRANSIT TIME			2.64 DAYS	
NORTH CAROL	CHARLOTTE		*	8.67	1242	2	621	107.71	6.56	13981	16	873	917.87
				AVERAGE TRANSIT TIME		1.50 DAYS			AVERAGE TRANSIT TIME			2.00 DAYS	
NORTH CAROL	CHARLOTTE		*	26.71	2377	9	264	634.96	12.38	18796	48	391	2328.10
				AVERAGE TRANSIT TIME		3.66 DAYS			AVERAGE TRANSIT TIME			3.75 DAYS	
NORTH CAROL	CHARLOTTE		*	.00	0	0	0	0.00	11.34	1574	2	787	178.61
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.50 DAYS	
NORTH CAROL	CHARLOTTE		*	.00	0	0	0	0.00	13.34	143	1	143	19.09
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
NORTH CAROL	CHARLOTTE		*	.00	0	0	0	0.00	12.92	180	1	180	23.27
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
NORTH CAROL	CHARLOTTE		*	3.31	12000	1	12000	397.20	3.31	35000	3	11666	1160.30
				AVERAGE TRANSIT TIME		7.00 DAYS			AVERAGE TRANSIT TIME			7.00 DAYS	
NORTH CAROL	CHARLOTTE		*	.00	0	0	0	0.00	8.95	952	2	476	85.28
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
NORTH CAROL	CHARLOTTE		*	8.84	1076	3	358	95.18	9.55	14594	42	347	1394.08
				AVERAGE TRANSIT TIME		2.00 DAYS			AVERAGE TRANSIT TIME			1.90 DAYS	
NORTH CAROL	CHARLOTTE		*	.00	0	0	0	0.00	6.08	935	1	935	56.90
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			4.00 DAYS	
NORTH CAROL	CHARLOTTE		**	7.39	16695	15	1113	1235.05	7.15	86155	116	742	6164.00

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
				AVERAGE TRANSIT TIME 3.26 DAYS					AVERAGE TRANSIT TIME 2.86 DAYS				
NORTH CAROL	DURHAM		*	.00	0	1	0	205.05		0	1	0	205.05
				AVERAGE TRANSIT TIME 3.00 DAYS					AVERAGE TRANSIT TIME 3.00 DAYS				
NORTH CAROL	DURHAM		*	7.39	3934	2	1967	290.86	5.24	52341	32	1635	2743.32
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 1.37 DAYS				
NORTH CAROL	DURHAM		**	12.60	3934	3	1311	495.91	5.63	52341	33	1586	2948.37
				AVERAGE TRANSIT TIME 2.33 DAYS					AVERAGE TRANSIT TIME 1.42 DAYS				
NORTH CAROL	ELIZABETH C		*	.00	0	1	0	52.44	14.20	950	5	190	134.90
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.20 DAYS				
NORTH CAROL	ELIZABETH C		**	.00	0	1	0	52.44	14.20	950	5	190	134.90
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.20 DAYS				
NORTH CAROL	FAYETTEVILL		*	.00	0	0	0	0.00	9.75	670	2	335	65.39
				AVERAGE TRANSIT TIME DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
NORTH CAROL	FAYETTEVILL		*	.00	0	3	0	1234.44		0	9	0	2891.94
				AVERAGE TRANSIT TIME 1.66 DAYS					AVERAGE TRANSIT TIME 2.11 DAYS				
NORTH CAROL	FAYETTEVILL		*	23.18	265	3	88	61.43	13.88	1489	10	148	206.73
				AVERAGE TRANSIT TIME 3.33 DAYS					AVERAGE TRANSIT TIME 3.30 DAYS				
NORTH CAROL	FAYETTEVILL		*	17.96	91	1	91	16.35	10.85	2944	2	1472	319.53
				AVERAGE TRANSIT TIME 3.00 DAYS					AVERAGE TRANSIT TIME 4.00 DAYS				
NORTH CAROL	FAYETTEVILL		**	368.60	356	7	50	1312.22	68.26	5103	23	221	3483.59
				AVERAGE TRANSIT TIME 2.57 DAYS					AVERAGE TRANSIT TIME 2.78 DAYS				
NORTH CAROL	GREENSBORO		*	4.47	58369	27	2161	2611.23	4.59	162967	98	1662	7484.49
				AVERAGE TRANSIT TIME 2.70 DAYS					AVERAGE TRANSIT TIME 2.52 DAYS				
NORTH CAROL	GREENSBORO		*	.00	0	0	0	0.00	9.07	390	1	390	35.41
				AVERAGE TRANSIT TIME DAYS					AVERAGE TRANSIT TIME 3.00 DAYS				
NORTH CAROL	GREENSBORO		*	.00	0	0	0	0.00	41.60	80	2	40	33.28
				AVERAGE TRANSIT TIME DAYS					AVERAGE TRANSIT TIME 3.00 DAYS				
NORTH CAROL	GREENSBORO		*	27.24	342	3	114	93.18	9.03	8844	22	402	799.25
				AVERAGE TRANSIT TIME 2.33 DAYS					AVERAGE TRANSIT TIME 3.13 DAYS				
NORTH CAROL	GREENSBORO		*	.00	0	0	0	0.00	10.18	558	1	558	56.86
				AVERAGE TRANSIT TIME DAYS					AVERAGE TRANSIT TIME 3.00 DAYS				

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY		CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER			C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
NORTH CAROL	GREENSBORO			*	.00	0	0	0	0.00	11.34	130	1	130	14.75
					AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			9.00 DAYS	
NORTH CAROL	GREENSBORO			*	.00	0	0	0	0.00	16.73	273	2	136	45.70
					AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			8.00 DAYS	
NORTH CAROL	GREENSBORO			*	.00	0	0	0	0.00	9.75	619	1	619	60.36
					AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
NORTH CAROL	GREENSBORO			*	3.60	11700	1	11700	422.35	2.47	90705	6	15117	2244.75
					AVERAGE TRANSIT TIME			7.00 DAYS		AVERAGE TRANSIT TIME			5.83 DAYS	
NORTH CAROL	GREENSBORO			*	.00	0	0	0	0.00	8.18	312	1	312	25.55
					AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			16.00 DAYS	
NORTH CAROL	GREENSBORO			*	16.06	104	1	104	16.71	10.03	8096	23	352	812.77
					AVERAGE TRANSIT TIME			5.00 DAYS		AVERAGE TRANSIT TIME			2.04 DAYS	
NORTH CAROL	GREENSBORO			**	4.45	70515	32	2203	3143.47	4.25	272974	158	1727	11613.17
					AVERAGE TRANSIT TIME			2.87 DAYS		AVERAGE TRANSIT TIME			2.86 DAYS	
NORTH CAROL	HICKORY			*	.00	0	0	0	0.00	18.90	700	2	350	132.34
					AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			5.50 DAYS	
NORTH CAROL	HICKORY			*	.00	0	0	0	0.00	8.21	1560	1	1560	128.20
					AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			6.00 DAYS	
NORTH CAROL	HICKORY			*	.00	0	0	0	0.00	13.79	330	2	165	45.51
					AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			6.00 DAYS	
NORTH CAROL	HICKORY			*	8.43	5914	9	657	498.82	7.02	52610	74	710	3695.16
					AVERAGE TRANSIT TIME			2.22 DAYS		AVERAGE TRANSIT TIME			2.22 DAYS	
NORTH CAROL	HICKORY			*	12.58	2600	1	2600	327.10	12.43	11150	12	929	1386.97
					AVERAGE TRANSIT TIME			1.00 DAYS		AVERAGE TRANSIT TIME			2.25 DAYS	
NORTH CAROL	HICKORY			*	20.36	3948	8	493	804.13	15.49	15165	30	505	2349.06
					AVERAGE TRANSIT TIME			2.37 DAYS		AVERAGE TRANSIT TIME			3.40 DAYS	
NORTH CAROL	HICKORY			*	.00	0	0	0	0.00	12.03	702	4	175	84.48
					AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			6.75 DAYS	
NORTH CAROL	HICKORY			*	3.42	15650	1	15650	535.23	3.42	15650	1	15650	535.23
					AVERAGE TRANSIT TIME			7.00 DAYS		AVERAGE TRANSIT TIME			7.00 DAYS	
NORTH CAROL	HICKORY			*	.00	0	0	0	0.00	10.71	8666	4	2166	928.26
					AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.75 DAYS	
NORTH CAROL	HICKORY			**	7.70	28112	19	1479	2165.28	8.71	106533	130	819	9285.21
					AVERAGE TRANSIT TIME			2.47 DAYS		AVERAGE TRANSIT TIME			2.83 DAYS	

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
NORTH CAROL	KINSTON		*	.00	0	0	0	0.00	15.40	195	2	97	30.04
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.50 DAYS	
NORTH CAROL	KINSTON		*	9.33	179	1	179	16.71	9.33	179	1	179	16.71
				AVERAGE TRANSIT TIME			4.00 DAYS		AVERAGE TRANSIT TIME			4.00 DAYS	
NORTH CAROL	KINSTON		**	9.33	179	1	179	16.71	12.50	374	3	124	46.75
				AVERAGE TRANSIT TIME			4.00 DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
NORTH CAROL	MURPHY		*	.00	0	0	0	0.00	7.76	1231	4	307	95.63
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			4.75 DAYS	
NORTH CAROL	MURPHY		**	.00	0	0	0	0.00	7.76	1231	4	307	95.63
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			4.75 DAYS	
NORTH CAROL	RALEIGH		*	.00	0	0	0	0.00	16.11	125	1	125	20.14
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
NORTH CAROL	RALEIGH		*	.00	0	0	0	0.00	5.09	14960	3	4986	762.60
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			1.66 DAYS	
NORTH CAROL	RALEIGH		*	.00	0	0	0	0.00	6.69	1225	2	612	82.00
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
NORTH CAROL	RALEIGH		*	.00	0	0	0	0.00	5.44	1045	1	1045	56.95
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
NORTH CAROL	RALEIGH		*	8.44	290	1	290	24.48	7.49	1829	4	457	137.09
				AVERAGE TRANSIT TIME			1.00 DAYS		AVERAGE TRANSIT TIME			1.50 DAYS	
NORTH CAROL	RALEIGH		*	.00	0	0	0	0.00	6.84	672	1	672	45.97
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			8.00 DAYS	
NORTH CAROL	RALEIGH		*	.00	0	0	0	0.00	6.05	11722	16	732	709.29
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			1.81 DAYS	
NORTH CAROL	RALEIGH		**	8.44	290	1	290	24.48	5.74	31578	28	1127	1614.04
				AVERAGE TRANSIT TIME			1.00 DAYS		AVERAGE TRANSIT TIME			2.03 DAYS	
NORTH CAROL	ROCKY MOUNT		*	.00	0	0	0	0.00	11.08	1255	9	139	139.06
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.77 DAYS	
NORTH CAROL	ROCKY MOUNT		*	9.03	648	3	216	58.54	10.69	996	6	166	106.48
				AVERAGE TRANSIT TIME			3.33 DAYS		AVERAGE TRANSIT TIME			2.66 DAYS	
NORTH CAROL	ROCKY MOUNT		*	12.29	2156	3	718	265.13	11.28	8586	11	780	968.56
				AVERAGE TRANSIT TIME			4.33 DAYS		AVERAGE TRANSIT TIME			4.00 DAYS	

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
NORTH CAROL	ROCKY MOUNT		*	.00	0	0	0	0.00		0	1	0	183.70
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
NORTH CAROL	ROCKY MOUNT		*	.00	0	0	0	0.00	6.83	700	1	700	47.81
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
NORTH CAROL	ROCKY MOUNT		*	.00	0	0	0	0.00	7.26	1217	3	405	88.46
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
NORTH CAROL	ROCKY MOUNT		**	11.54	2804	6	467	323.67	12.02	12754	31	411	1534.07
				AVERAGE TRANSIT TIME			3.83 DAYS		AVERAGE TRANSIT TIME			3.19 DAYS	
NORTH CAROL	WILMINGTON		*	22.29	81	1	81	18.06	22.29	81	1	81	18.06
				AVERAGE TRANSIT TIME			3.00 DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
NORTH CAROL	WILMINGTON		**	22.29	81	1	81	18.06	22.29	81	1	81	18.06
				AVERAGE TRANSIT TIME			3.00 DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
NORTH CAROL	WINSTON-SAL		*	6.25	4657	4	1164	291.32	6.09	45484	25	1819	2773.34
				AVERAGE TRANSIT TIME			1.50 DAYS		AVERAGE TRANSIT TIME			1.36 DAYS	
NORTH CAROL	WINSTON-SAL		*	4.61	11359	2	5679	524.44	4.75	11877	3	3959	564.27
				AVERAGE TRANSIT TIME			3.50 DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
NORTH CAROL	WINSTON-SAL		**	5.09	16016	6	2669	815.76	5.81	57361	28	2048	3337.61
				AVERAGE TRANSIT TIME			2.16 DAYS		AVERAGE TRANSIT TIME			1.53 DAYS	
NORTH CAROL			***	6.89	149723	99	1512	10325.23	6.38	707177	588	1202	45165.06
				AVERAGE TRANSIT TIME			2.92 DAYS		AVERAGE TRANSIT TIME			2.68 DAYS	

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
OHIO	CANTON		*	.00	0	0	0	0.00	6.47	6315	1	6315	409.09
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			4.00 DAYS	
OHIO	CANTON		*	.00	0	0	0	0.00	7.27	7980	1	7980	580.94
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
OHIO	CANTON		**	.00	0	0	0	0.00	6.92	14295	2	7147	990.03
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.50 DAYS	
OHIO	CINCINNATI		*	.00	0	0	0	0.00	6.70	1665	1	1665	111.72
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
OHIO	CINCINNATI		*	20.08	5815	16	363	1168.00	11.60	50409	70	720	5848.83
				AVERAGE TRANSIT TIME			3.18 DAYS		AVERAGE TRANSIT TIME			3.82 DAYS	
OHIO	CINCINNATI		*	.00	0	0	0	0.00	11.77	245	1	245	28.84
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
OHIO	CINCINNATI		*	.00	0	0	0	0.00	14.35	124	1	124	17.80
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			1.00 DAYS	
OHIO	CINCINNATI		*	.00	0	0	0	0.00	8.91	1830	1	1830	163.20
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			DAYS	
OHIO	CINCINNATI		**	20.08	5815	16	363	1168.00	11.36	54273	74	733	6170.39
				AVERAGE TRANSIT TIME			3.18 DAYS		AVERAGE TRANSIT TIME			3.70 DAYS	
OHIO	CLEVELAND		*	.00	0	0	0	0.00	9.56	1260	2	630	120.58
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
OHIO	CLEVELAND		*	.00	0	0	0	0.00	8.35	480	1	480	40.09
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
OHIO	CLEVELAND		*	.00	0	0	0	0.00	8.65	2570	2	1285	222.31
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
OHIO	CLEVELAND		*	10.28	1855	2	927	190.77	11.21	3740	5	748	419.60
				AVERAGE TRANSIT TIME			4.50 DAYS		AVERAGE TRANSIT TIME			3.60 DAYS	
OHIO	CLEVELAND		*	.00	0	0	0	0.00	8.23	3426	1	3426	282.30
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			4.00 DAYS	
OHIO	CLEVELAND		*	.00	0	0	0	0.00	10.17	16193	25	647	1648.09
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			6.00 DAYS	
OHIO	CLEVELAND		*	.00	0	0	0	0.00	27.90	100	1	100	27.90
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
OHIO	CLEVELAND		**	10.28	1855	2	927	190.77	9.94	27769	37	750	2760.87

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	YEAR TO DATE C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
				AVERAGE TRANSIT TIME 4.50 DAYS					AVERAGE TRANSIT TIME 5.02 DAYS				
OHIO	COLUMBUS		*	.00	0	0	0	0.00	9.40	3000	3	1000	282.26
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME 5.00 DAYS				
OHIO	COLUMBUS		*	19.56	130	1	130	25.44	19.56	130	1	130	25.44
				AVERAGE TRANSIT TIME 3.00 DAYS					AVERAGE TRANSIT TIME 3.00 DAYS				
OHIO	COLUMBUS		*	.00	0	0	0	0.00	4.51	4872	1	4872	220.00
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME 9.00 DAYS				
OHIO	COLUMBUS		**	19.56	130	1	130	25.44	6.59	8002	5	1600	527.70
				AVERAGE TRANSIT TIME 3.00 DAYS					AVERAGE TRANSIT TIME 5.40 DAYS				
OHIO	DAYTON		*	18.86	105	1	105	19.81	15.44	6471	7	924	999.54
				AVERAGE TRANSIT TIME 4.00 DAYS					AVERAGE TRANSIT TIME 3.28 DAYS				
OHIO	DAYTON		**	18.86	105	1	105	19.81	15.44	6471	7	924	999.54
				AVERAGE TRANSIT TIME 4.00 DAYS					AVERAGE TRANSIT TIME 3.28 DAYS				
OHIO	SPRINGFIELD		*	.00	0	0	0	0.00	15.13	355	2	177	53.72
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME 3.50 DAYS				
OHIO	SPRINGFIELD		**	.00	0	0	0	0.00	15.13	355	2	177	53.72
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME 3.50 DAYS				
OHIO	TOLEDO		*	.00	0	0	0	0.00	45.28	89	2	44	40.30
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME 2.50 DAYS				
OHIO	TOLEDO		*	.00	0	0	0	0.00	12.29	1144	1	1144	140.71
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME 2.00 DAYS				
OHIO	TOLEDO		**	.00	0	0	0	0.00	14.68	1233	3	411	181.01
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME 2.33 DAYS				
OHIO	YOUNGSTOWN		*	.00	0	1	0	225.75		0	1	0	225.75
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				
OHIO	YOUNGSTOWN		**	.00	0	1	0	225.75		0	1	0	225.75
				AVERAGE TRANSIT TIME 2.00 DAYS					AVERAGE TRANSIT TIME 2.00 DAYS				

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
OHIO			***	20.61	7905	21	376	1629.77	10.59	112398	131	858	11909.01

AVERAGE TRANSIT TIME 3.28 DAYS AVERAGE TRANSIT TIME 4.06 DAYS

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
RHODE ISLAN	PROVIDENCE		*	.00	0	0	0	0.00	11.75	1147	1	1147	134.83
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
RHODE ISLAN	PROVIDENCE		*	11.55	1605	4	401	185.52	13.33	6221	12	518	829.45
				AVERAGE TRANSIT TIME			2.50 DAYS		AVERAGE TRANSIT TIME			2.41 DAYS	
RHODE ISLAN	PROVIDENCE		*	25.03	103	1	103	25.79	25.03	103	1	103	25.79
				AVERAGE TRANSIT TIME			5.00 DAYS		AVERAGE TRANSIT TIME			5.00 DAYS	
RHODE ISLAN	PROVIDENCE		*	9.91	16208	15	1246	1606.83	9.74	44907	46	976	4374.43
				AVERAGE TRANSIT TIME			2.23 DAYS		AVERAGE TRANSIT TIME			3.60 DAYS	
RHODE ISLAN	PROVIDENCE		**	10.14	17916	18	995	1818.14	10.24	52378	60	872	5364.50
				AVERAGE TRANSIT TIME			2.44 DAYS		AVERAGE TRANSIT TIME			3.38 DAYS	
RHODE ISLAN			***	10.14	17916	18	995	1818.14	10.24	52378	60	872	5364.50
				AVERAGE TRANSIT TIME			2.44 DAYS		AVERAGE TRANSIT TIME			3.38 DAYS	

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
SOUTH CAROL	AIKEN		*	.00	0	0	0	0.00	36.98	61	1	61	22.56
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
SOUTH CAROL	AIKEN		*	.00	0	0	0	0.00	12.83	913	5	182	117.14
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.80 DAYS	
SOUTH CAROL	AIKEN		*	.00	0	0	0	0.00	10.77	998	3	332	107.57
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			6.66 DAYS	
SOUTH CAROL	AIKEN		*	.00	0	0	0	0.00	10.56	2141	11	194	226.17
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.36 DAYS	
SOUTH CAROL	AIKEN		**	.00	0	0	0	0.00	11.51	4113	20	205	473.44
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.35 DAYS	
SOUTH CAROL	CHARLESTON		*	20.99	230	3	76	48.28	20.99	230	3	76	48.28
				AVERAGE TRANSIT TIME		2.33 DAYS			AVERAGE TRANSIT TIME			2.33 DAYS	
SOUTH CAROL	CHARLESTON		*	.00	0	0	0	0.00	22.12	100	1	100	22.12
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			1.00 DAYS	
SOUTH CAROL	CHARLESTON		**	20.99	230	3	76	48.28	21.33	330	4	82	70.40
				AVERAGE TRANSIT TIME		2.33 DAYS			AVERAGE TRANSIT TIME			2.00 DAYS	
SOUTH CAROL	COLUMBIA		*	9.53	1351	3	450	128.88	9.92	2113	7	301	209.68
				AVERAGE TRANSIT TIME		2.00 DAYS			AVERAGE TRANSIT TIME			2.00 DAYS	
SOUTH CAROL	COLUMBIA		*	7.55	629	2	314	47.55	9.36	2694	11	244	252.24
				AVERAGE TRANSIT TIME		4.00 DAYS			AVERAGE TRANSIT TIME			4.72 DAYS	
SOUTH CAROL	COLUMBIA		*	20.20	86	1	86	17.38	20.20	86	1	86	17.38
				AVERAGE TRANSIT TIME		2.00 DAYS			AVERAGE TRANSIT TIME			2.00 DAYS	
SOUTH CAROL	COLUMBIA		*	8.94	1985	3	661	177.53	9.18	5490	13	422	504.10
				AVERAGE TRANSIT TIME		4.00 DAYS			AVERAGE TRANSIT TIME			3.92 DAYS	
SOUTH CAROL	COLUMBIA		*	.00	0	0	0	0.00	23.66	75	1	75	17.75
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
SOUTH CAROL	COLUMBIA		*	.00	0	0	0	0.00	48.89	164	1	164	80.18
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
SOUTH CAROL	COLUMBIA		**	9.16	4051	9	450	371.34	10.18	10622	34	312	1081.33
				AVERAGE TRANSIT TIME		3.11 DAYS			AVERAGE TRANSIT TIME			3.61 DAYS	
SOUTH CAROL	FLORENCE		*	.00	0	0	0	0.00	9.42	412	2	206	38.82
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			8.00 DAYS	

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
SOUTH CAROL	FLORENCE		**	.00	0	0	0	0.00	9.42	412	2	206	38.82
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			8.00 DAYS	
SOUTH CAROL	GREENVILLE		*	.00	0	0	0	0.00	17.40	127	1	127	22.10
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.00 DAYS	
SOUTH CAROL	GREENVILLE		*	12.91	859	6	143	110.98	11.01	7028	25	281	774.26
				AVERAGE TRANSIT TIME			1.66 DAYS		AVERAGE TRANSIT TIME			2.04 DAYS	
SOUTH CAROL	GREENVILLE		*	58.30	724	6	120	422.12	10.05	25465	34	748	2560.78
				AVERAGE TRANSIT TIME			3.66 DAYS		AVERAGE TRANSIT TIME			5.88 DAYS	
SOUTH CAROL	GREENVILLE		*	.00	0	0	0	0.00	4.44	4093	1	4093	181.73
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
SOUTH CAROL	GREENVILLE		*	.00	0	0	0	0.00	18.23	619	1	619	112.90
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			6.00 DAYS	
SOUTH CAROL	GREENVILLE		**	33.67	1583	12	131	533.10	9.78	37332	62	602	3651.77
				AVERAGE TRANSIT TIME			2.66 DAYS		AVERAGE TRANSIT TIME			4.22 DAYS	
SOUTH CAROL	ROCKHILL		*	.00	0	0	0	0.00	8.25	659	1	659	54.37
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			5.00 DAYS	
SOUTH CAROL	ROCKHILL		**	.00	0	0	0	0.00	8.25	659	1	659	54.37
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			5.00 DAYS	
SOUTH CAROL	SPARTANBURG		*	5.11	5279	2	2639	269.90	5.00	36187	21	1723	1810.07
				AVERAGE TRANSIT TIME			2.00 DAYS		AVERAGE TRANSIT TIME			2.38 DAYS	
SOUTH CAROL	SPARTANBURG		*	.00	0	2	0	805.41		0	8	0	1906.48
				AVERAGE TRANSIT TIME			1.50 DAYS		AVERAGE TRANSIT TIME			1.50 DAYS	
SOUTH CAROL	SPARTANBURG		*	.00	0	0	0	0.00	9.41	2012	5	402	189.41
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.60 DAYS	
SOUTH CAROL	SPARTANBURG		**	20.36	5279	4	1319	1075.31	10.22	38199	34	1123	3905.96
				AVERAGE TRANSIT TIME			1.75 DAYS		AVERAGE TRANSIT TIME			2.35 DAYS	
SOUTH CAROL			***	18.20	11143	28	397	2028.03	10.11	91667	157	583	9276.09
				AVERAGE TRANSIT TIME			2.64 DAYS		AVERAGE TRANSIT TIME			3.57 DAYS	

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
WISCONSIN	GREEN BAY		*	.00	0	0	0	0.00	10.62	3306	1	3306	351.10
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			4.00 DAYS	
WISCONSIN	GREEN BAY		**	.00	0	0	0	0.00	10.62	3306	1	3306	351.10
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			4.00 DAYS	
WISCONSIN	MILWAUKEE		*	19.27	1140	1	1140	219.68	19.27	1140	1	1140	219.68
				AVERAGE TRANSIT TIME			2.00 DAYS		AVERAGE TRANSIT TIME			2.00 DAYS	
WISCONSIN	MILWAUKEE		*	.00	0	0	0	0.00	12.83	2921	5	584	374.77
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			5.60 DAYS	
WISCONSIN	MILWAUKEE		*	.00	0	0	0	0.00	13.09	564	1	564	73.83
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			5.00 DAYS	
WISCONSIN	MILWAUKEE		*	34.26	267	2	133	91.50	11.96	8021	12	668	960.05
				AVERAGE TRANSIT TIME			5.50 DAYS		AVERAGE TRANSIT TIME			5.83 DAYS	
WISCONSIN	MILWAUKEE		*	.00	0	0	0	0.00	13.32	4271	9	474	569.30
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			6.22 DAYS	
WISCONSIN	MILWAUKEE		*	.00	0	0	0	0.00	13.75	2448	2	1224	336.79
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			3.50 DAYS	
WISCONSIN	MILWAUKEE		**	22.11	1407	3	469	311.18	13.08	19365	30	645	2534.42
				AVERAGE TRANSIT TIME			4.33 DAYS		AVERAGE TRANSIT TIME			5.60 DAYS	
WISCONSIN	OSHKOSH		*	23.63	280	2	140	66.19	18.13	914	6	152	165.77
				AVERAGE TRANSIT TIME			4.50 DAYS		AVERAGE TRANSIT TIME			5.33 DAYS	
WISCONSIN	OSHKOSH		*	.00	0	0	0	0.00	11.99	526	2	263	63.07
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			10.50 DAYS	
WISCONSIN	OSHKOSH		**	23.63	280	2	140	66.19	15.89	1440	8	180	228.84
				AVERAGE TRANSIT TIME			4.50 DAYS		AVERAGE TRANSIT TIME			6.62 DAYS	
WISCONSIN	RACINE		*	.00	0	0	0	0.00	26.91	95	1	95	25.57
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			5.00 DAYS	
WISCONSIN	RACINE		**	.00	0	0	0	0.00	26.91	95	1	95	25.57
				AVERAGE TRANSIT TIME			DAYS		AVERAGE TRANSIT TIME			5.00 DAYS	
WISCONSIN			***	22.36	1687	5	337	377.37	12.97	24206	40	605	3139.93

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FIRST KEY	SECOND KEY	THIRD KEY	FOURTH KEY	CURRENT MONTH					YEAR TO DATE				
STATE	CITY	CARRIER		C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES	C/CWT	WEIGHT	ITEMS	AVG/WT	CHARGES
				AVERAGE TRANSIT TIME 4.40 DAYS					AVERAGE TRANSIT TIME 5.75 DAYS				

EFFECTIVE COST PER 100 POUNDS FOR A 20,000 POUND SHIPMENT MOVING 400 MILES

Appendix Table A-6

	CORRIDOR 8					CORRIDOR 1					
Class LTL	20,000 # Class Rate	T/L Rating	T/L Min. Wt.	Eff. T/L Rate	Cutback Point for T/L Rate	5,000 or 10,000 Cl.Rate	T/L Rating	T/L Min. Wt.	Appli.T/L Min. Wt.	Eff. T/L Rate	Cutback Point for T/L Rate
100	4.78	35	30M	3.64	15,230	5.44	35	30M	24M	2.64	9,706
		40		4.03	16,862		40			2.80	10,294
		45		4.22	17,657		45			3.15	11,581
		50		4.87	—		50			2.95	10,846
		55	24M	4.05	16,946		55	24M		3.22	11,838
		70	18M	3.95	16,527		70	18M	18M	3.43	12,610
		70	20M	3.95	16,527		70	20M	20M	3.43	12,610
		77 1/2	16M	4.65	19,456		77 1/2	16M	16M	3.80	13,971
Average	4.78			4.17	17,448	5.44				3.18	11,691
77 1/2	4.05	35	30M	3.64	17,975	4.23	35	30M	28M*	2.64	12,482
		35	36M	4.36	—		35	36M	28M*	2.64	12,482
		35	40M	4.85			35	40M	28M*	2.64	12,482
		40	30M	4.03	19,901		40	30M	28M*	2.80	13,239
		45	24M	3.37	16,642		45	24M	24M	2.72	12,861
		45	30M	4.22	—		45	30M	28M*	3.15	14,894
		50	30M	4.87	—		50	30M	24M	2.95	13,948
		55	24M	4.05	—		55	24M	24M	3.22	15,225
Average	4.05			4.17	—	4.23				2.85	13,452
55	2.91	35	36M	4.36	—	2.99	35	36M	28M*	2.64	17,659
		35	40M	4.85	—		35	40M		2.64	17,659
		35	50M	5.07	—		35	50M		2.64	17,659
		37 1/2	36M	4.60	—		37 1/2	36M		2.73	18,261
		37 1/2	40M	5.11	—		37 1/2	40M		2.73	18,261
		40	30M	4.03	—		40	30M		2.80	18,729
Average	2.91			4.67	—	2.99				2.70	18,060

*Average applicable T/L minimum Weight (24M + 36M + 30M + 3 Bureaus = 28M)

APPENDIX E2

CORRIDOR STUDIES REPORT
WESTERN DOUBLES UTILIZATION IN THE EAST

DOT-TSC-1690

FINAL REPORT OF

TASK 10

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January 2, 1980

Task 10

CORRIDOR STUDIES REPORT

WESTERN DOUBLES UTILIZATION IN THE EAST

A. Introduction

In the previous analysis regarding freight rates and service considerations, it was discovered that the introduction of Western Doubles considered alone, would have no measurable impact upon shipper's selection of carriers or modes of transportation. This conclusion was based on extensive rate research which showed few rates reflecting the potential advantage from the use of Western Doubles. Western Doubles appear to be used by carriers at their own option and convenience. Perhaps carrier costs are reduced, but no rate differential is passed on to the shipping public in any measurable amount. Therefore, the emphasis of the study was shifted to assess the impact Western Doubles might have on carrier fleet operations if this configuration were permitted throughout the East.

To assess the impact on individual carriers, detailed terminal to terminal traffic flow information was secured from two large eastern carriers. Both carriers had operating revenues in the one hundred million dollar range and operated between 30 and 60 terminals each. Further, both carriers had substantial general common carrier operations and collectively operated in over 25 states.

From these operating profiles and traffic flows, it was possible to draw some conclusions regarding the potential extent of Western Doubles penetration into the eastern market. Some percentages were developed to identify the number of dispatches and percent of trailer fleets that could or would logically be switched to Western Doubles if this configuration were permitted in the East. For example, the analysis showed that if balance problems were ignored, as high as 16% of a carrier's total dispatches might consist of Western Doubles units. However, when fleet balance problems were considered in the analysis, this figure dropped to 6%. Many terminals which logically could dispatch Western Doubles trailers have an excess of inbound long single trailers. These excess long single trailers would be loaded outbound before employing Western Doubles.

B. Confidentiality

Due to the sensitive nature of the information provided to the study team, the carriers insisted that confidential treatment be afforded any detailed statistical or traffic flow information generated in the analysis. Obviously, they also requested the raw data be guarded very closely. In order to meet these realistic commercial constraints, the study team aggregated information in such a way that general operating profiles could be developed and regional traffic flows identified without divulging the specific identity or terminal location of the carriers.

C. Data Evaluation

For this analysis the following assumptions were made regarding the use of Western Doubles:

- Western Doubles would be used primarily for LTL freight.
- Western Doubles would be used to reduce platform handling.
- Western Doubles would be used between terminal pairs that were unable to generate sufficient total tonnage (LTL and TL) to justify the daily dispatch of a long single trailer.
- Every attempt would be made to achieve a balanced operation in both freight flows and equipment disposition.
- Freight will be dispatched from each terminal 5 days per week.
- Western Doubles could move profitably if loaded to 50% of the capacity of a long single trailer.
- Each terminal would have to dispatch at least two Western Double trailers to a centralized staging location each day in order to avoid the necessity of sending out the small Western Double trailers as single units.

Based on the above assumptions, from a total of approximately 5,700 terminal pairs, only 230 were able to fulfill all the criteria for an optium Western Doubles type operation, i.e. dispatching two or more doubles each day to a central location for further transportation to a single destination terminal. This is only 4% of the total terminal pairs and means that

freight moving between 96 out of every 100 terminal pairs would still require some type of break-bulk operation. Obviously, if a terminal point generates enough freight daily to fill two Western Doubles, a carrier would have the logical option of dispatching a long single trailer (up to cubic capacity) in place of the two doubles and still eliminate platform handling of the freight enroute.

In this analysis, a truckload of freight was defined according to the average weight per trailer dispatched for each of the carriers surveyed. Thus, the carrier with the longer average haul had a slightly higher average weight per trailer dispatched. This was also verified by reviewing the sample carriers in the American Trucking Association's Financial and Operating Statistics.

D. Balance Problems

In the above analysis, no credit was given to balance problems which greatly complicate the projections. For example, when analyzing carrier "A", it was discovered that while 21 of the 35 terminals would be able to take advantage of the use of Western Doubles, for outbound freight, 11 of these terminals would experience balance problems. These problems would be severe enough to force the carrier to deadhead empty Western Doubles inbound at the same time he was sending empty long singles outbound. Thus, about 50% of the total terminals of carrier "A" would not be able to use Western Doubles freely. The opposite

situation exists for a terminal receiving more Western Doubles equipment than it would be able to dispatch on a daily basis.

The fact that Eastern carriers would be operating both long single trailers and short 27' trailers in their fleet, further complicates the balance problem by introducing a situation where two incompatible equipment types are forced to operate in the same environment. Western Doubles and long singles are not compatible because the long single trailer presently used in the Eastern part of the U.S. requires a tandem axle tractor in order to support the weight on the long moment arm from the rear axle to the trailer kingpin. In contrast, the Western Doubles type unit only requires a single axle tractor because the weight of the two trailers is spread over the same number of axles but with shorter moment arms. Thus, there is one axle under each end of each trailer unit. Further, the large tandem axle tractor used in the East cannot be connected to a short Western Doubles trailer because the overhang from the center of the fifth wheel to the end of the frame is great enough to cause the frame to hit the landing gear legs which support the trailer when it is parked. Thus, a carrier operating a mixed fleet must have two fleets of tractors and two fleets of trailers.

A discussion of balance problems must include considerations of both freight and equipment problems. An imbalance of freight is inherent in almost any common carrier operation.

Freight imbalances result simply from geographical differences in production and comsumption patterns. For example, Detroit, Michigan is a heavy inbound area because many automobile sub-assemblies arrive in the Detroit area by truck but are shipped out as complete automobiles by another mode. Thus, carriers operating terminals in Detroit are continually faced with the prospect of shipping empty trailers from Detroit to other terminal areas. Atlanta, Georgia, on the other hand is a distribution center for the South and therefore generates a lot of TL traffic inbound and LTL traffic outbound. Freight imbalances occur regardless of the equipment mix, and continually cause problems in fleet balance. In the case of a mixed Western Doubles and long single fleet, freight imbalance problems further aggravate equipment balance problems.

The compounding of these balance problems becomes obvious when one considers a terminal point such as Atlanta that generates significant inbound TL freight that is handled in long singles, but also generates predominately Western Doubles type LTL freight outbound. This type terminal would be forced to deadhead empty Western Doubles equipment inbound and send empty long singles outbound. Such an inefficient operation is unacceptable and for this terminal, the carrier would obviously compromise his operating philosophy and either use the long singles for outbound LTL freight or entice shippers to load the inbound truckload traffic on the "less desirable" Western

Doubles. A third (and expensive) option would be to pick up the truckload shipment in the long singles, transfer the freight to Western Doubles for the line haul and then again transfer the freight to a long single at destination for delivery to the consignee.

Thus, it can be seen that when general freight balance problems and LTL vs TL shipping patterns are considered together with equipment incompatibilities, the problem of insuring the proper equipment at the proper terminal is greatly complicated. One carrier with whom we discussed the use of Western Doubles in the Eastern operation said that it would probably be four or five years after initiating a Western Doubles operation before he would know for certain whether he had made the proper decision. The following section illustrates the complex manner in which traffic and fleet balance combine to complicate a simple Western Doubles dispatching process.

E. Example of Balance Problems

Table 10-1, "Western Doubles Projected Dispatches..." shows the trailer dispatching options for long singles and Western Doubles units for one of the study carriers. The table demonstrates some of the balance problems discussed above using actual tonnage data. For example, Terminal A could normally dispatch 7½ Western Doubles units (two 27' trailers equals one unit) per day to various other terminal locations in the system. However, this terminal only has sufficient inbound LTL tonnage to receive an average of 5

Western Doubles units per day. To have sufficient outbound trailer supply, Western Doubles units would have to be deadheaded into the terminal daily. However, as reflected in the last column of the table, this terminal receives a surplus of about 20 long single trailers daily as a result of truckload tonnage. Therefore, it would not be logical to deadhead empty doubles into the terminal.

Terminal C, for example, receives a surplus of 2½ Western Doubles per day and also a surplus of 4 long singles all of which must be deadheaded to a terminal location having a net outbound freight flow. Terminal E could dispatch 11½ Western Doubles units a day but only receives 7½ inbound. Further, this terminal has zero daily balance of long single trailers. As a result, empty trailers would have to be deadheaded into the terminal regardless of the type of equipment used.

These are simple fleet balance problems that can be solved by moving empty equipment around. However, the magnitude of the balancing procedure becomes more clear when one considers that each of the terminals in question would ideally be receiving trailers daily directly from all the other terminals. In actual practice, this is not the case. The terminals would receive units according to the following schedule:

> Terminal A would receive Western Doubles from terminals T, U, V, BB, D, F, H, I, O and S. Terminal C would receive Western Doubles from terminals X, DD, EE, GG,

A, D, E, F, J and S. Terminal E would receive Western Doubles from terminals T, V, BB, CC, EE, FF, HH, C, D, L, M and R.

Each of these terminals in turn would receive their inbound trailers from numerous geographically dispersed terminals. The decision that each terminal manager or central dispatcher makes regarding the dispatching of Western Doubles or long singles then has a ripple effect on the receiving terminal as well as on each of the subsequent receiving terminals.

It is apparent from this analysis that any in-depth study of the projected use of Western Doubles in the east must take many factors into consideration. Among them are the balance of both traffic and equipment, the type of driver operation, the degree of variation among the terminals in balancing inbound and outbound, seasonal fluctuation and many other factors.

Most eastern carriers which the study team contacted expressed an interest in Western Doubles and indicated a willingness to integrate them into their line-haul operation. However, most said they would definitely study the proposed operation thoroughly and it might take considerable time to arrive at the proper operational mode and equipment mix. From our brief analysis of the active traffic flows of two carriers, it is reasonable to estimate Western Doubles penetration at no greater than five to ten percent of the total Eastern fleet of tractor-trailer combinations.

WESTERN DOUBLES PROJECTED DISPATCHES BASED ON ACTUAL CARRIER TRAFFIC FLOW

TERMINAL	WESTERN DOUBLES (two trailer units) LTL Traffic			LONG SINGLES (single 45' trailer unit) TL Traffic		
	OUT	IN	NET	OUT	IN	NET
A	7½	5	-2½	12	32	+20
B	-	3½	+3½	-	4	+4
C	2	4½	+2½	-	4	+4
D	7½	5½	-2	-	20	+20
E	11½	7½	-4	32	32	0
F	10	8	-2	8	16	+8
G	1	½	-½	-	4	+4
*H	4	5½	+1½	32	12	-20
I	1	1½	+½	-	4	+4
J	8	4½	-3½	8	16	+8
K	1	6½	+5½	-	4	+4
L	2½	2	-½	4	8	+4
M	1½	2	+½	-	12	+12
*N	3	7½	+4½	72	32	-40
O	½	3	+2½	-	4	+4
P	½	3½	+3	-	-	0
Q	1	1	0	-	12	+12
R	3½	3	-½	4	12	+8
S	2	-	-2	4	8	+4
T	6	6½	+½	4	16	+12
U	1	1	0	-	4	+4
V	1½	3	+1½	-	4	+4
W	-	3	+3	-	4	+4
*X	5	3	-2	88	8	-80
Y	2	2½	+½	-	4	+4
Z	-	1½	+1½	-	-	0
AA	-	2	+2	-	4	+4
BB	4½	6½	+2	-	4	+4
CC	3	3	0	4	16	+12
*DD	17	9½	-7½	42	32	-10
EE	11	4½	-6½	8	8	0
FF	2	4	+2	-	4	+4
*GG	14	8	-6	40	16	-24
HH	4	2½	-1½	-	4	+4
II	-	4	+4	-	8	+8

*Break Bulk Terminal

Source: Analysis of actual 1979 terminal tonnage data of a major Eastern motor common carrier.

APPENDIX F

REPORT OF NEW TECHNOLOGY

The work performed under this contract did not result in any inventions, discoveries, or innovations, which are reportable under the contract patent clause. However, this study does represent an improvement in technical knowledge about the motor carrier industry, its use of double trailer truck combinations and the motor carrier rate structure. The invention or development of new technology was not expected.

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