them consistent or inconsistent with the requirements of coordinated behavior.[5/] To start with, consider this list of circumstances that render a market relatively conducive to coordinated interaction: a standardized product, with standardized ancillary services and no significant nonprice competition; a small number of market participants, all having similar production and marketing structures, and all protected by barriers from competitive entry; published prices, which may quickly be republished and put into effect; reliable and public market data on sales volumes; good information about rivals' costs and about specific transactions; and predictable frequent transactions, no one of which represents a major profit opportunity.

In these circumstances, firms may believe that there is relatively low economic risk in trying to reach terms of coordination, and they may have considerable incentive to do so.[6/] If one firm publishes a price increase of five percent, it

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[5/] The Guidelines identify a number of market factors that, "[d]epending upon the circumstances . . . may be relevant" in assessing the likelihood of coordinated interaction: "the availability of key information concerning market conditions, transactions and individual competitors; the extent of firm and product heterogeneity; pricing or marketing practices typically employed by firms in the market; the characteristics of buyers and sellers; and the characteristics of typical transactions." Id.

[6/] I am referring here and throughout to coordination short of express agreement that would be unlawful under the antitrust laws. To the extent that coordinated interaction would violate these laws, it becomes even less likely, by reason of the substantial penalties associated with such violations. Violation of the Sherman Act is a felony for which an individual may be

stands to gain that increase on all of its output. The likelihood that the initiative will elicit the desired response from rivals is relatively high. A price increase that advantages one firm will also likely advantage the others, since the firms have similar cost structures for the product line and are otherwise similar. The profit-maximizing price for the group as a whole is likely to be the profit-maximizing price for each firm within the group, given successful coordination. Symmetrical market shares stand a good chance of providing an even-handed way to share the gains from coordination, and if it were satisfactory for one firm, the symmetries of the market should make it then satisfactory for all. Since costs for the product and business opportunities for the firms are similar, the opportunity cost for each firm of coordinating rather than competing is likely to be similar.

Here, the risk in initiating an effort at coordination is fairly limited. The firm that first publishes a price increase will soon know whether its rivals are going to follow suit, increase their prices by some lesser amount, or not increase their prices at all. Rivals' responses will be prompt

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sentenced to prison for up to three years (15 U.S.C. § 1). Individuals and corporations may be fined up to the greatest of three alternatives: $350,000 in the case of an individual and $10 million in the case of a corporation (15 U.S.C. § 1); twice the pecuniary gain the individual or corporation derived from the crime, or twice the pecuniary loss sustained by victims of the crime (18 U.S.C. § 3571). See also the United States Sentencing Commission Guidelines, U.S.S.G. §§ 2R.1 (sentencing for antitrust offenses), 8A1.1-E1.3 (sentencing for organizational defendants), 18 U.S.C. App.

and unambiguous, through channels that are lawful and public. Prices, since they are for the same standardized product and services, and since they are published, may readily be compared.

In the situation I have described, the key factors are not likely to be consistent with strong incentives to cheat on terms of coordination. No one transaction represents a compelling profit opportunity such that a single episode of cheating would bring a significant gain. Prompt and accurate detection of cheating is relatively likely because information about specific transactions, against the market backdrop, is quickly available, and each firm knows how to interpret the pricing of the other firms wihout ambiguity since they all face similar costs and sell similar products. A maverick deviation is less likely to be mistaken for an innocent reaction to any market factor.

As I have already noted, the incentive and ability to retaliate promptly and effectively are further prerequisites for coordinated interaction. In the circumstances that I have described here, these necessary elements are at least somewhat problematic. It is difficult to target only the customers of the cheating firm for substantial discounts or additional services. Retaliation therefore may have to take the form of reverting to competitive, or even lower prices, for some period of time sufficient to offset the gains of the cheating firm. The difficulty here, of course, is that the retaliating firm will also suffer the consequences.

While a good measure of clarity has emerged from this example about some of the key factors that influence how conducive a market may be to coordinated effects, some ambiguity may well remain about whether the incentives are strong enough actually to produce coordination. In any event, it should be clear without the need of much further elaboration in this section that the key factors that seemed here to encourage successful coordination all have counterparts that, as a matter of economic logic, point in the opposite direction towards a market that is not conducive to coordinated effects. Based on my experience with matters of railroad competition and cost structures, and my own understanding of the circumstances in this case, factors of this latter sort are characteristic of the markets in which BN/Santa Fe and the merged UP/SP would be rivals, as the next three sections will discuss. This leads to the conclusion that coordinated effects are highly unlikely to be a valid concern in this merger.

C. The Inherent Incentives Of Rail Carriers To Build Traffic Volume Are At Odds With Mutual Agreement On Terms of Coordination And on Deterrence of Maverick Behavior

The imagined joint exercise of market power, through mutual agreement on terms of coordination, necessarily entails the restriction of output, inasmuch as shippers evidence any price elasticity of demand for rail service. For a major railroad, however, to forgo volume and not seek the fullest possible compensatory utilization of existing capacity would

contradict the most basic tenets of railroading -- tenets that are rooted in the basic cost structure of railroads.

It is beyond dispute that railroads have high fixed costs. This is true both on a systemwide basis and for particular lines of business and capabilities. For example, the costs of storage facilities and the capacity to deliver reliable service both have substantial fixed components. Damage-free automobile delivery is another example of capability whose costs are largely fixed.[7/] The fixed costs create a major economic risk to the railroads from restricting output, and the size and timing of the economic risk is not likely to be the same for two railroads participating in the same market. These disincentives to volume repression are magnified by the fact that many railroad costs are not only fixed but also joint and common. By restricting its output in one line of business, a railroad is likely to be increasing the cost pressures it experiences on other lines of business that share some of the same joint and common costs. Again, the effects on the two railroads are not likely to be the same.

Closely related to cost structure is the presence of excess capacity. Excess capacity (or the ability readily to divert capacity being used for other purposes), and low

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7/ I am told that the extent of damage to autos during rail transportation depends on a variety of factors, including the condition of the equipment, track dynamics, the frequency and extent of grades on the route, the extent of switching, and the engineer's handling of the train with respect to slack action. Few of these factors entail costs that are variable to the performance.

opportunity costs of utilizing that capacity, are among the key determinants of a firm's incentive to disrupt coordinated interaction with a maverick deviation that builds volume.[8/] That characteristic goes, as well, to the incentive of a firm to agree to begin volume-restricting coordinated interaction in the first place. A firm with substantial ability profitably to expand its output is less likely to consider coordinated interaction that restricts its output to be more profitable than competing. That is especially so where variable costs are a relatively low portion of total costs.

In fact, the conditions for vigorous efforts not only to maintain but to expand output will be present if UP and SP merge. Like all railroads, the UP/SP and BN/Santa Fe will continue to exhibit significant economies of density and of scope. In the presence of such economies, a given increment of traffic represents not only the contribution to be earned from that increment, but additional contribution on other traffic because of such economies. These economies create strong incentives to gain all profitable volumes.

Both the UP/SP and BN/Santa Fe systems would have the ability to handle additional volumes. BN/Santa Fe is not at capacity now, nor will UP/SP be once their systems are combined. Both systems will be able to expand their output by adding cars to trains, and trains to routes, and, for many routes, eventually

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[8/] The Guidelines are in accord. See §§ 2.12.

adding double or triple track, or additional sidings to facilitate trains of different speeds.

The merger would intensify these incentives to gain volume. Among the merger's many benefits are that it will effectively increase the capacity of the merged system, over and above the capacity of UP and SP separately, as the testimony of Messrs. Peterson and King/Ongerth demonstrate in detail. Route specialization to separate high-speed traffic (such as intermodal and auto) from manifest traffic would be a particularly dramatic step toward increased capacity, as well as improved service.

Even if a railroad could reconcile loss of traffic volume as a necessary concomitant of profitable coordination, a separate issue is the difficulty a pair of railroads would experience in reaching mutually agreeable terms of coordination requiring different, or equal, levels of traffic forbearance. Since this seeming negotiation would be unlikely to go on at a personal level (with the risks of criminal prosecution for antitrust felonies), it would of necessity be carried out in a groping fashion in the marketplace, and be unlikely to stabilize in view of the directly conflicting interests of the carriers to handle more of the traffic.

For all of these economic reasons, quite apart from any legal or moral considerations, a railroad manager would likely be resistant to the philosophy that the railroad would be better off by coordinating to restrict output than by competing. Restricting output when there is unused capacity would entail

substantial economic risks, because the high fixed, and joint and common, costs would not disappear. Underutilization could become increasingly difficult to explain. The extent of these risks would raise the requisite threshold for clarity and assurance that the rival system is, in fact, (1) willing to coordinate in ways that are more advantageous than competing, (2) is able to coordinate, and (3) is not cheating. The complexities and dynamic nature of the industry make it highly unlikely that such clarity and assurances could ever be achieved through tacit means.

D. The Heterogeneity Of Rail Services, Non-Price Competition, And The Complex Bidding That Surrounds Rail Contracting Make It Highly Unlikely For Coordinated Behavior To Be Successful

Railroads do not offer a standardized product; they offer heterogeneous, complex products and they compete along multiple dimensions in ways that are evolving rapidly and that are reflected in the complex bidding that often occurs in this industry. Two railroads may, of course, provide transportation of a particular commodity between points A and B. But that single spatial component seldom defines the transportation product. Rare is the shipper, for example, that is indifferent to the time that the move will take, or the variation in time over repeated moves (i.e., reliability). A particular movement typically is embedded in numerous other services and expectations, including movement of that commodity in other lanes; movement of different commodities in that and other lanes; and numerous elements of nonprice competition, such as equipment

availability, speed, frequency, reliability, facilities for loading and reloading, facilities for storage, and electronic information for car tracing and other functions. Railroads, including a merged UP/SP and BN/Santa Fe, differ along these multiple dimensions of competition. For example, facilities, such as terminals, yards, auto ramps, and intermodal facilities, differ with respect to location, capacity, available capacity, and efficiency. Equipment availabilities differ, including specialized cars and locomotive power. Levels of service differ greatly. Although the merger will enhance UP/SP's competitive abilities, these various types of differences with the BN/Santa Fe system will not be erased.

Some brief descriptions of major commodity areas will illustrate these points.

(1) Automotive traffic

Automobile manufacturers typically request bids for all of their traffic into an area, which might be a region, such as the Southwest, or a BEA, such as Phoenix or Houston. The manufacturers determine how to define the destination areas they will put up for a single bid. Since most manufacturers originate automobile traffic (including finished autos and trucks, as well as auto parts) at multiple locations, bids for all traffic into a destination area, however defined, involve multiple lanes, and potential interchanges with several other railroads. They also typically involve at least two basic products: automobiles and trucks, each of which has different transportation

characteristics. Auto parts are bid separately. When part or all of a railroad's bid is for movements that would involve interlining the traffic with another carrier, service levels must be coordinated with each potential interchange partner. All this adds up to a great deal of complexity; for example, bidding on Ford traffic can involve ten or eleven Ford plants, several gateways, and up to five different railroads that might be potential interchange partners on such traffic.

Further illustrating the complexity, competition for auto traffic is along multiple dimensions. It includes price, speed, reliability, frequency, and the number of lanes that the carrier can serve single-line. Automobile manufacturers are demanding that ever-higher percentages of finished autos arrive both ontime and free of damage (the percentage of vehicles arriving damage-free is known as the "finished vehicle quality rate"). Just-in-time performance is often demanded for auto parts. Methods for defining equipment availability are evolving. Manufacturer requirements for pro-active monitoring of traffic flows are becoming more specific and rigid; for example, manufacturers increasingly want the railroad to be able to notify the truck carrier that will haul the vehicles from the destination ramp (the "haul-away carrier") of the estimated time of arrival of the train. Rates may be differentiated along a scale that is geared to service and quality. A railroad's bid may reflect whether it views the traffic as incremental traffic on an established train, and the extent of new investments that

it would need to make in order to serve the traffic. Many terms are specific to corridors or regions.

(2) Chemicals traffic

About a third of chemicals traffic (including plastics) is also subject to highly complex bidding, involving numerous lanes and products, for giant, multi-location, companies such as Exxon, Chevron, PPG, and Proctor & Gamble. The scope of the bids is controlled by the shipper. These bids can involve upwards of 50, and even hundreds of rail destinations, where terminals, manufacturers, and re-packagers are located. Such bidding can generate 15-20 contracts between one railroad and the chemical producer, grouped, for example, around traffic that is moved single-line; traffic that is interchanged with shortlines; or all traffic interchanged with a particular Eastern railroad. I am informed that SP's bid contained thousands of rates.

In addition to these mega-bids, another 30 to 35 percent of chemicals traffic moves under contracts covering multiple points, but less than the dozens or hundreds that are involved in the mega-bids. These flows result from shipper requests to railroads for rate quotes on volumes in the range 50 to 500 carloads a year, involving one or two commodities. Wherever possible, railroads will attempt to convert these situations into multi-lane opportunities by offering quotes on some broader set of relevant traffic, in addition to the traffic that is the subject of the initial request. Again, the shipper

controls the scope of the transactions, and can determine the approach that best serves its economic interests in dealing with the railroads, including switching between narrow and broad arrangements.

Somewhat less than a third of chemicals traffic moves under tariffs, but even these are becoming more particularized. Railroads are now filing Limited Distribution tariffs, which are applicable only to the named company.

While price is a key component of competition in the rail movement of chemicals and plastics, safety and emergency response represent additional, nonprice, dimensions of competition. Storage for plastics represents another major dimension of nonprice competition between railroads, as plastics generally move from production directly to rail cars, and are often sold while they are in storage in railcars.

As shippers own most of the cars that move chemicals and plastics traffic, the equipment competition between railroads is with respect to the car cycle (the speed and scheduling of loaded moves and empty returns). Numerous shipper statements filed in this proceeding attest to the importance of the car cycle. That aspect of competition bears both on the extent of storage that the railroads are required to provide (shippers have little space for storage), and on the size of the fleets that shippers are required to obtain. While not all chemicals differ in their transportation characteristics, the number of categories

that do differ is considerable.[9/] The variety of specialized cars makes the management of turnaround a complex dimension of nonprice competition.

(3) Intermodal traffic

Intermodal traffic presents another complex area of rail competition. Intermodal traffic exhibits different transportation characteristics, depending on whether it is international container traffic or domestic container or trailer traffic, truckload ("TL") or less-than-truckload ("LTL"), and wholesale or retail. Some TL traffic is very service-sensitive (including speed, reliability, frequency, and the availability of containers or trailers and rail cars); other segments are less service-sensitive. LTL shippers (such as Consolidated Freightways) and package shippers (such as United Parcel Service) tend to be the most intensely service-sensitive intermodal shippers, and will pay a premium for service.

Rates can reflect numerous variables relating to the characteristics of the movement or the circumstances of the railroad with respect to that movement at that time. These may include the size and type of the container or trailer; the direction of the flow; the volumes; the distance from the actual origin or destination to the railroad's origin or destination ramp; whether the containers are loaded or empty; the

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[9/] For example, some chemicals move in tank cars, and some, such as plastics and fertilizers, in covered hoppers. Some chemicals move in steel tank cars; others in stainless steel. Some require a latex lining; others move in vinyl-lined cars. Some gases require a pressurized tank car.

characteristics of the commodity inside the container, for example, hazardous, high value, and temperature sensitive; the balance in the lane of the railroad's flatcars and of rail-owned trailers or containers; ramp and train capacity; and the terminal services that the shipper requires.

Other important dimensions of nonprice competition for intermodal traffic include speed; reliability; frequency; and the numerous aspects of customer service, including the quality of electronic information provided by the railroad for car tracing and other purposes, responsiveness when the customer diverts a move after it is underway, and the ease and handling of damage claims. Critical elements of competition for most types of intermodal traffic relate to the railroad's facilities for the loading, unloading and long- or short-term storage of containers and trailers. Capacity can be critical because steamship companies prefer to use a single intermodal facility within a destination area. The location of a facility within a destination area may be more or less advantageous for a steamship company or Intermodal Marketing Company ("IMC"), because of the drayage costs entailed in using the facility. (IMCs are intermediaries that assemble transportation and related services for shippers in domestic intermodal markets.) While railroads can offset cost disadvantages with rate concessions, they cannot offset time differences, which shippers view as somewhat distinct from cost. Railroad offerings with respect to the use of facilities can be quite specific. For example, in Houston, SP

provides a back gate for one steamship company so that the company does not have to wait in line to enter or exit the yard.

Some steamship companies bid all of their business in multi-lane packages. Others will break up the business, but still in multi-lane sets. The lanes for Los Angeles and Oakland international intermodal traffic are to and from El Paso, San Antonio, Dallas, Houston, New Orleans, Memphis, St. Louis, Kansas City and Chicago, for a total of 18 lanes just involving those two West Coast ports. (The number of actual permutations is greater because those cities are both gateways and origin or destination areas.) Transcontinental traffic through the Pacific Northwest generally moves to or from Chicago. Railroads will bid different rates for each of the lanes. Within a lane, rates will depend on the direction of the move and on variables such as those I enumerated above.

In the domestic intermodal sector, most of which is wholesale, IMCs with large accounts (for example, National Biscuit Co.) may ask railroads for bids on multiple lanes. Much of domestic intermodal, however, involves more individualized quotes for moves that, in the intermodal area, are considered relatively small (for example, less than $3 million annually). Perhaps 15 to 20 percent of intermodal traffic moves on standard book rates, which are utilized only for some traffic that is not service sensitive.

(4) Food products shipments

One further example will illustrate the complexities of competition between large railroads even in a somewhat less complicated area. Food products from California include canned goods and tomato products shipped as paste for further manufacturing. From a transportation point of view, these constitute only two products with differing transportation characteristics. Canned goods move in so-called RBLs, which are boxcars equipped with insulation, movable bulkheads, and hydro-cushioning.[10/] Tomato product moves in plain boxcars. Here, too, speed and reliability are essential parts of the railroad transportation product, as is equipment availability. SP has, in fact, lost food products business in some situations where it bid the lowest price, because of shipper dissatisfaction with its service.

Complex, multi-lane bidding (involving several or more lanes) covers a large portion of the food products shipped from California. For example, Hunt-Wesson has four canneries in California, from which it ships to 12 different distribution centers in the Midwest, Northeast, and Southeast. Tri-Valley has six canneries in California, shipping to about 20 distribution centers. Del Monte has four canneries in California, shipping to four distribution centers and to a remanufacturing facility. Heinz has three manufacturing plants in California, and ships to

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10/ "RBL" is short for "refrigerated boxcars with load distributors," but the cars are only insulated, not mechanically refrigerated.

about a half-dozen distribution centers and three remanufacturing facilities in the Midwest and Northeast.

(5) Coordinated behavior would be generally difficult for railroads to sustain

The various discussed rail transportation markets are characterized by product heterogeneity, nonprice competition, and complex transactions. These characteristics bear on all facets of the likelihood of sustained coordinated interaction -- reaching terms of coordination, promptly detecting cheating, and promptly and effectively retaliating.[11/]

Substantial nonprice competition complicates reaching terms of coordination. The forms of nonprice competition may be both numerous and difficult to define with requisite precision. Nonprice competition tends to be dynamic, as producers search for ways to differentiate their product, and respond to explicit customer demands. Automobile manufacturers, for example, have increased their specifications for damage-free delivery.

[11/] While I have not exhaustively illustrated the characteristics of competition for all of the commodities that move by rail in the West, I see no reason to expect that my ultimate conclusion would be changed by more detailed consideration of additional types of commodities. The pervasive characteristics of major railroads that I identify as militating against coordinated interaction, such as high fixed costs and economies of density, do not change with the type of commodity. Moreover, Mr. Peterson shows the extent of modal and geographic competition for many types of traffic, including traffic at apparent three-to-two points, which of course also limit the incentives and ability to engage in coordinated interaction. Further, as Mr. Peterson demonstrates, few true three-to-two situations are to be found that involve commodities not included within the examples I use, such as grain, lumber, forest products, and metals. With respect to coal, Mr. Sharp does not identify any three-to-two points.

Increasing numbers of shippers have begun using just-in-time inventory, which has led them to make escalating demands on railroads for greater reliability. Escalating demands for reliability (and other elements of service) also characterize LTL intermodal shippers. Where, as in the railroad industry, there is rapid evolution of forms of nonprice competition, or customer demands with respect to existing forms of such competition, it is not sufficient to reach agreement once; repeated efforts must be made to establish new terms of coordination, and the evolution may create repeated ambiguities as to whether some evolving form of nonprice competition is or is not subject to the terms of the coordination.[12/]

It is, of course, theoretically possible to reach terms of coordinated interaction that extend to price but not to some or all nonprice elements of competition. But such agreements may not be sustainable if nonprice competition can determine competitive outcomes. Two railroads might attempt to coordinate on price. But, the shipper may award the business based on speed, or reliability for just-in-time inventory, or equipment availability, or investment by the railroad in new facilities, or

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[12/] The importance of nonprice competition has recently been stressed by Judge Douglas Ginsburg of the U.S. Court of Appeals for the D.C. Circuit. Judge Ginsburg wrote that "nonprice competition is a widespread and powerful inhibition to collusion"; that "larger firms are particularly unlikely to overcome the barrier to collusion that nonprice competition poses"; and that collusion "cannot be profitable -- and is therefore a good deal less likely to occur -- in a market where nonprice competition can play a significant role." Douglas H. Ginsburg, "Nonprice Competition," 38 Antitrust Bulletin 83, 84, 93 (Spring 1993).

more advantageous geographic coverage, or terminal or ramp capacity or location, or combinations of those or other factors. Then, the rival carrier will not be able to discern confidently whether the business was genuinely lost to nonprice considerations, or whether the other carrier had become defiantly aggressive in its price bid, either in general, or more particularly just for the variant of the product design that carried the sale. Further, with non-price competition altering the design and cost of the product, it is difficult to discern what is to be the coordinated level of price; there is bound to be disagreement over that price level among those with products having different costs and elasticities; and it will be correspondingly difficult to recognize adherence versus deviation from coordinated terms of pricing.

If the terms of coordinated interaction fail to include even a few, let alone multiple, significant elements of nonprice competition, prompt detection and credible retaliation are compromised. A firm that loses to a rival may not readily be able to determine whether its loss was due to cheating by the rival or was due to one or more elements of nonprice competition not subject to the coordinated interaction. As I have described, coordinated interaction is not sustainable in the absence of the ability promptly to detect and retaliate for cheating.

Nonprice competition illustrates the broader point that heterogeneity between firms with respect to their products and their structures of production adds challenging difficulty that

makes sustainable coordinated interaction far less likely. There is, first of all, simply more that must be agreed on, with a corresponding increase in the number of opportunities for disagreement. Heterogeneity implies that the firms are likely to disagree about what is the most profitable set of terms on which to coordinate. In particular, firms with relatively high marginal costs would seek relatively high levels for the coordinated prices, while the firms with relatively low marginal costs would profit more from a lower price. The latter also make the more dangerous mavericks, since they can profit the most from volume building deviations. Perhaps most difficult for the firms is the fact that with strong heterogeneity, they are unlikely to even understand one another in terms of what they really want, and in terms of how unsatisfactory they are really finding various options. Unable to communicate directly, such firms are very unlikely to work out a sustainable coordinated regime.

Moreover, if the products and services offered by two railroads are not uniform, the likelihood is increased that the firms would have to agree on the value of combinations of products and services that are different from each other; they would have to assign values to the differences. Different combinations are often difficult to compare.

The various complexities may be illustrated by an example in which, for chemicals traffic, one railroad provides better storage and a better safety record than the other, and the other provides better reliability and faster turnaround on

shipper-owned cars. Assume further that their single-line capabilities differ with respect to the shipper's traffic flows.

For coordinated interaction to occur, the two railroads, through signals and without express discussions, would have to arrive at a decision on which should handle what part of the business, what their relative prices should be in view of their differences in service characteristics, and how to handle the uncertainties that these decisions would create. What is the monitoring mechanism to be that distinguishes between a cheating price intended to steal away the business from the would-be coordinator, and a price that appears low but was intended as a coordinated price for a low-cost version of the product? This aspect of heterogeneity generalizes to the case of differences in costs and in mutual perceptions.

Fundamental differences between complex systems such as BN/Santa Fe and a merged UP/SP reduce both the incentive and the ability to achieve sustained coordinated interaction. Such differences mean that coordinations that would advantage one railroad are not necessarily going to advantage the other. Limitations on output that maximize profits for one are not likely to do the same for the other. For example, the routes of the two railroads between the same two points will seldom be identical.[13/] The efficiency and cost structures of their routes will inevitably differ, for example, with respect to circuity and

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[13/] Even where one system would utilize trackage rights or haulage over another, the move would originate or continue beyond that portion of the move.

grade. Their costs and profit opportunities for particular moves will reflect their differing densities over the route, whether the traffic is incremental to an established train, backhaul or triangulation opportunities, the efficiencies of the yards and other facilities that each would employ, and other dynamic factors. Their opportunity costs for particular moves will likely differ, and are not likely to be known to the other. The railroads will often differ in their degree of revenue adequacy and, therefore, in their costs of capital. Financial objectives, and, in turn, traffic and corridor strategies, are likely to be different at any particular time. Cash flows and time horizons are likely to differ because, for example, their investments were made at different times. The discount rates that the railroads use internally to evaluate investments and opportunities are likely to differ. These differences affect not only the likelihood that terms of coordination will be agreed to, but that they will be sustained.

These differences would make it difficult to sustain coordinated interaction even if railroads were fully informed concerning their nature, timing and extent. In fact, the effect of these differences on the likelihood of sustained coordinated interaction is compounded by the lack of information that one railroad has concerning these differences, or, even more to the point, the lack of information that one railroad has about how its rival views itself with respect to these matters. It is not plausible that after the merger, UP/SP and BN/Santa Fe would be

able, without explicit sharing, to develop reliable and timely information about the other railroad's volumes of loaded and empty moves, equipment deployments, investment hurdle rates, particular revenue or profit goals, and the like, or how the other railroad determines contribution from particular moves or combinations of moves, reload opportunities, and so on to an endless array of factors. Arriving at mutually beneficial restrictions on output or price increases becomes all the more unlikely in the face of highly imperfect and changing information. That would be so even if the two railroads sat down and (unlawfully) conducted an explicit negotiation. To overcome these difficulties through tacit means seems unlikely in the extreme.

(6) The difficulties of tacit communication for railroads

Somebody has to initiate efforts at coordinated interaction, and those efforts must be correctly interpreted for coordination to be accomplished. Unlike an increase in a book of published prices that apply to all sales to all customers, a price increase by one railroad to a particular customer does not gain for the railroad the same increase on any other shipper's business, even if the rival agrees. The days of published prices, rate bureaus, and rate equalization are long since over in the railroad industry. While tariffs are still on file, most traffic today moves under contracts, and a price increase to one customer has no applicability to another.

The railroad that initiates efforts at coordination is not likely to receive a prompt and unambiguous signal as to whether its initiative has been received, understood and agreed to by its rival. A railroad, in an effort to initiate coordinated interaction, could increase its price in bidding on a particular shipper's business. The railroad might still win the business because, for example, it did not know what its rival was going to bid and did not increase its price enough to exceed the rival's price, or exceed the rival's price enough to offset some other advantage that it had over the rival. If the initiating railroad wins the business, the rival is unlikely to get the message that the bid was an invitation to coordinated interaction.

Even if the initiating railroad loses the business, however, what has it accomplished? The initiating railroad would not know whether its rival understood that the rival's win was due to an invitation to coordinate, and not to normal competitive factors. Further, the initiating railroad would not know whether, if its rival understood the invitation, it had agreed to coordinate. The initiating railroad would not know the answer until some other bidding opportunity arose. Since rail transportation contracts are often for periods of a year and more, the next opportunity might be for a different customer. Given the myriad bidding opportunities, how would the initiating railroad recognize the one in which the rival is taking reciprocal action? Is it likely to recognize a response on autos

when it initiated the action in chemicals? All of these difficulties for tacit collusion stand in sharp contrast to the circumstances of uniform posted prices in which, within a day or two, the initiating firm knows through a public and lawful channel whether its rivals have taken reciprocal action.

(7) There are strong incentives to cheat on coordination that arise from the nature of the contract business

Due to the character of railroad contract business, incentives to cheat would be powerful, even in the event that railroads managed to overcome all other obstacles to reaching agreement on complex terms of coordination. Many rail contracts involve large volumes; cover time periods of a year or more; and confer subsequent advantages on the incumbent when next the bidding occurs. The high stakes in such circumstances intensify the incentives for a rail carrier to cheat by competing vigorously for the business, even though the terms of coordination may call for that rail carrier to behave far less aggressively.[14/]

For example, contracts for rail transportation of automobiles and trucks are for three to five years. Unusual capital investments by the railroad can increase the duration to seven years. For instance, several years ago, GM shifted its traffic moving between Eastern points and Southern California and

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[14/] According to the Guidelines (§ 2.12): "Where large buyers likely would engage in long-term contracting, so that the sales covered by such contracts can be large relative to the total output of a firm in the market, firms may have the incentive to deviate."

Phoenix. To gain this traffic, Santa Fe acquired about 1,000 new multi-level rail cars, at a cost of about $80 million, and built facilities at a cost of about $35 million. That contract was for seven years.

Manufacturers may be moving to contracts of shorter duration, because they believe that doing so will allow them to test the market more often, and increase downward price pressure on railroads. Any such shift, however, would have to be reconciled with the railroad's need to amortize new investments associated with the business. It is unlikely that the average duration of auto contracts will ever be less than several years.

When auto contracts come up for renewal, the incumbent will have some advantage if its performance levels are as expected, and it is competitive on price. Changing rail carriers can entail disruption of the manufacturers' haul-away operations, from the destination ramp to dealers. Moreover, if the incumbent does not need to make additional investments, but the rival does, the rival may be seeking a longer duration, which the manufacturer may consider disadvantageous.

In the chemicals industry, plastics contracts are often for five years, and chemicals contracts for three years. The incumbent may have at least a slight advantage, due to the relationship or, sometimes, to a physical asset.

International intermodal contracts are for a year-and-a half to five years. Rate quotes for domestic intermodal are for

shorter durations, although here, too, there are three-way contracts involving a shipper, an IMC, and the railroad, which can be for one to three years. An incumbent that has provided service as expected and is price competitive will have some advantage with steamship companies, and with LTL shippers. In the food products area, contracts tend to be for one year, although some are for two years.

As these examples illustrate, railroads face major business opportunities that are relatively infrequent. In these circumstances, railroads are likely to have strong incentives to fight for business when they have the opportunity to do so, and not to limit their offerings in the hope of some larger gain through accommodating actions of a rival.

This conclusion is driven also by the presence of high fixed and joint and common costs, that I have already described, and by the presence of excess capacity. As I have already noted, the Merger Guidelines consider excess capacity to be one of the key characteristics of a "maverick" firm whose incentives to disrupt coordinated interaction will be strong. SP, UP and BN/Santa Fe have excess capacity today, and a merged UP/SP would have more excess capacity than the sum of the two railroads separately.

(8) Shippers' contracting practices make it difficult for railroads promptly to detect cheating

I have already referred to the ambiguities that are likely to arise for monitoring when the terms of coordination do not reach all important terms of trade, and, in particular, when there is significant nonprice competition. In addition, shippers generally agree in their bid requests that they will not disclose the components of one railroad's bid to another. This is not to say that shippers do not provide general information, after formal bidding or with respect to price quotations outside of formal bidding. Such information, however, is to serve the shipper's purposes in enhancing competition. The information is not likely to be -- and certainly need not be -- sufficiently precise and credible to give a railroad engaged in coordinated interaction the requisite certainty that its rival has cheated and that there is occasion to launch retaliation (which will itself be costly to the railroad that is retaliating). Thus, not only complexity but secrecy or imperfect information in the context of bidding for contract business would make it difficult for one railroad to detect cheating by another.

(9) The pattern of shipper contracts may create difficulties for prompt and effective retaliation

It is vital for the stability of coordination that potential mavericks anticipate that sure punishment would promptly follow a deviation. However, it might well be the case that even if detection turned out to be reliable, that punishment could be neither swift nor sure. In particular, it might be the

case that shipper contracts were let for significant periods of time, and that there were none coming up soon in the area of the deviation. Of course, a railroad could bid and attempt to punish aggression in an unstructured way, but the odds are that the maverick would not be especially punished, or punished at all. It may not be possible to target retaliatory sallies against the maverick, and since there is typically no important auction for business in general, there may be no way retaliation can reach the deviator for a significant period of time.

(10) The unavailability of effective simplifying factors

In theory, strategies may exist for overcoming the difficulties posed for coordination by product heterogeneity and multiple dimensions of competition. The Merger Guidelines recognize that firms "coordinating their interactions need not reach complex terms concerning the allocation of the market output or the level of the market prices but may, instead, follow simple terms such as a common price, fixed price differentials, stable market shares, or customer or territorial restrictions."[15/] The Guidelines also recognize, however, that "[a]t some point . . . imperfections cause the profitability of abiding by the terms of coordination to decrease and, depending on their extent,

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[15/] §2.11 Such elements are sometimes referred to in the literature as "focal points."

may make coordinated interaction unlikely in the first instance."[16/]

Simplifying alternatives relate, of course, only to the ability to achieve and sustain coordinated interaction. They are relevant only insofar as strong incentives to coordinate already exist, and insofar as strong incentives to cheat do not exist. As I have shown, however, where the issue concerns large railroads, strong incentives to coordinate are not likely to be present. Different cost-structures and opportunity costs, for example, mean that what benefits one railroad may not necessarily benefit the other. Incentives to cheat will also be strong, as I have discussed. Any simplifying alternatives would not mitigate the barriers to sustaining coordination that would be posed by strong incentives to cheat. I will now show that, in any event, simplifying alternatives are not likely even to be available, or to be efficacious, in the context that we are considering here.

As I have already discussed, where coordination omits important forms of nonprice competition, the partial approach is unlikely to support sustained coordinated interaction, particularly in a generally complex situation. Among other reasons, omitted but important forms of nonprice competition would make it difficult to draw prompt and unambiguous conclusions about whether a rival has cheated.

Territorial allocations are not likely to be reachable or sustainable by large western railroads. Railroads have a

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[16/] Id.

fixed, physical presence along their routes. Physical abandonment, or discontinuance of service, are prohibited by the Interstate Commerce Act without the approval of the Commission, which evaluates such matters under a public interest standard. Abandonments or discontinuances by the two systems that were part of an effort to achieve coordinated interaction would be impossible to rationalize satisfactorily before the Commission if they were of economic consequence, involving large volumes of profitable traffic. If they were of economic consequence, then the criteria for abandonment or discontinuance would not be satisfied. (If they were not of economic consequence, the carriers would be unlikely to make them the subject of coordinated interaction.) Moreover, the common carrier obligation complicates limitations or withdrawals short of abandonment or discontinuance for traffic that the Commission has not exempted from the Interstate Commerce Act.[17/]

In addition to these difficulties, territorial allocations require some satisfactory equivalence between what is given up and what is gained. Achieving such equivalence through territorial allocation in the railroad industry would be difficult. The various types of traffic are not uniformly distributed among different geographic regions. Chemicals originations, for example, are concentrated in the Gulf Coast. Wheat originations are concentrated in the Midwest and Plains

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[17/] Railroads attempting coordinated interaction with respect to exempt traffic would face the added risk that the exemption would be withdrawn.

states. If one railroad withdrew from the Gulf Coast, and the other from the Midwest, they would have somehow to achieve equivalence as between chemicals and grain. Moreover, the political firestorm that such action would entail is reason enough to dismiss the possibility of this type of action.

Neither would the two merged systems have the same geographic presence among the various regions. Geographic coverage determines the traffic mix of large railroads. The traffic mixes of the two systems differ, which in turn means that each system will face different sources of contribution, different risks from the business cycle, and different seasonal patterns. Geographic withdrawals would affect all of these factors. These differences in basic economic position, and the complicated ramifications of withdrawing or limiting geographic presence, would likely confound efforts at territorial allocation. More broadly, they would also complicate efforts at other forms of coordinated interaction.

Customer allocations within a region are unlikely to be any more sustainable. Such allocations might involve allocating customers of a certain type, for example, one railroad might limit or end its competitive efforts with respect to commodity X, and the other railroad might do the same with respect to commodity Y. Or, the allocation might be of customers A and B, each of which ships commodity X. Here, too, it would be necessary to achieve some approximate equivalence. Doing so would require knowledge of the size of the contribution that the

other railroad believes it earns from the various customers; reconciling different time horizons (or internal discount rates); and limiting or taking into account new plant locations or shifts in production at existing plants. It would also be necessary to take account of the particular economic significance to one but not both of the railroads of particular traffic flows.[18/] If the withdrawal is complete, railroads that serve the same customer at exclusive and competitive points would have a hard time explaining why they are no longer bidding for business at the competitive points.

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In short, BN/Santa Fe and a merged UP/SP would lack both the incentive and the ability to engage in coordinated interaction. There seem to be no easy ways to overcome the complexities of Western railroading and achieve coordinated interaction on a sustained basis, and it is unlikely that the firms would even perceive such interaction to be more advantageous than competing to utilize their greatly enhanced capacities to the fullest. UP/SP and BN/Santa Fe will compete vigorously, not coordinate.

[18/] For example, one of the railroads might view the traffic at issue as incremental to established trains, whereas for the other the traffic might be an important reason why the trains were established in the first place.

E. Competitive Experience And The Views Of Shippers Confirm That UP/SP And BN/Santa Fe Will Compete Vigorously

My analysis has shown that the merger of UP/SP will significantly expand the capacity and competitive potential of UP/SP, that those efficiency benefits will redound directly to the benefit of the railroads' customers (and others who do not currently use them for their transportation needs), and that the characteristics of the transportation markets in which these firms compete make highly unlikely any express or tacit collusion involving UP/SP and BN/Santa Fe after the merger. These conclusions are confirmed by the available empirical evidence that demonstrates that railroads do compete vigorously when two railroads serve a market, and by the views of shippers that competition between UP/SP and BN/Santa Fe will be more, not less, effective than three-railroad competition involving BN/Santa Fe, UP and SP.

There are today a number of transportation corridors that are served by two railroads. Indeed, among these corridors are several that have been put in this category by previous railroad mergers. Each of these situations provides a laboratory in which to test the proposition that two railroads will compete vigorously for the available traffic. Mr. Peterson reviews several significant putative markets -- such as Powder River Basin coal originations, the Seattle/Tacoma-Chicago corridor, and the Los Angeles-Texas corridor -- where only two railroads compete today, and his testimony effectively demonstrates the

vigor and intensity of that competition. Mr. Peterson also analyzes several significant corridors -- served by the same railroads involved here -- in which past mergers have reduced the number of railroads from three to two. Shippers in those corridors saw their rates decrease in the aftermath of the merger. These experiments are not scientifically perfect, but they represent compelling real-life experience that confirms that the likely effect of this merger -- to the extent it causes particular traffic to go from three to two competing railroads for the available traffic -- will not be to increase rates and decrease service, but to achieve the opposite effect.

This basic proposition is also recognized by shippers that account for much of the traffic handled by the three existing Western railroads. Many have testified in this case explicitly that, based on their experience with railroads in a wide range of competitive situations, the competition among BN/Santa Fe and UP/SP resulting from this merger will be more intense and more beneficial than the three-railroad competition that exists today.[19/] And there are other shippers that use all three of the Western railroads today, or are in a position to do so, and will face only two after the transaction -- although the number of shippers that are truly in this position is far less than one might expect, as Mr. Peterson's analysis shows -- and yet strongly support the merger's approval. I regard this

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[19/] The following major customers are just a few examples: American President Companies, California Steel, CSX Intermodal, FMC Corp., the Port of Oakland, Riss Intermodal, and USS-POSCO.

testimony as significant corroboration of my own conclusions based on an analysis of the facts underlying this transaction.

VERIFICATION

I, Robert D. Willig, declare under penalty of perjury that the foregoing statement is true and correct. Further, I certify that I am qualified and authorized to file this statement. Executed on November 20, 1995.

Robert D. Willig

Robert D. Willig

November 1995

Curriculum Vitae

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	M.S. Operations Research, Stanford University, 1968.
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Professional Positions:

Deputy Assistant Attorney General, U.S. Department of Justice, 1989-1991

Professor of Economics and Public Affairs, Princeton University, 1978-

Supervisor, Economics Research Department, Bell Laboratories, 1977-1978.

Visiting Lecturer (with rank of Associate Professor), Department of Economics and Woodrow Wilson School, Princeton University, 1977-78 (part time).

Economics Research Department, Bell Laboratories, 1973-77.

Lecturer, Economics Department, Stanford University, 1971-73.

Other Professional Activities:

Member, National Research Council Highway Cost Allocation Study Review Committee

Member, Defense Science Board Task Force on the Antitrust Aspects of Defense Industry Consolidation, 1993-94.

Editorial Board, Utilities Policy, 1990-

Leif Johanson Lecturer, University of Oslo, November 1988.

Member, New Jersey Governor's Task Force on Market-Based Pricing of Electricity, 1987-89.

Co-editor, Handbook of Industrial Organization, 1984-89.

Associate Editor, Journal of Industrial Economics, 1984-89.

Director, Consultants in Industry Economics, Inc., 1983-89, 1991-94.

Fellow, Econometric Society, 1981-

Consulting: Bell Laboratories, 1978-79; AT&T, 1978-89, 1991-; Conrail 1978-87, 1991-; Federal Trade Commission, 1979-82, 1994-; Pennsylvania Bell, 1980; Simpson Thatcher Bartlett, 1980, 1993-; American Association of Railroads, 1981, 1985; Math-tech, 1981; Union Pacific Railroad, 1981, 1995; Family Lines Rail System, 1982; Pepper, Hamilton, and Scheetz, 1981-87, 1991-94; Siemens Corp., 1982; Board of Governors of U. S. Postal Service, 1981; OECD, 1983-85, 1991-; Sidley & Austin, 1983-89, 1991-; U.S. Postal Service, 1983-84; Echlin Inc., 1982-83; United Airlines, 1983, 1991-; Consultants in Industry Economics, 1983-89, 1991-; Wiley, Malehorn & Sirota, 1983-89; City of Newark, 1984; Arnold & Porter, 1986-89, 1991-; Howrey & Simon, 1985-88, 1993-4; Kodak, 1987-89; Crowell & Moring, 1988; Viacom 1989, 1991-94; Bell Atlantic, 1991-94; Intel, 1991-93; AOPL, 1993; IBM, 1993-; Merck, 1993-; Harkins Cunningham, 1993-; Boeing, 1993-; Niagra Mohawk, 1994; PSE&G, 1994-; Microsoft, 1994; Coca-Cola Co., 1994-; World Bank 1995.

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Organizer, American Economic Association Meetings: Sustainability Analysis, 1980; Telecommunications Deregulation, 1982.

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Principal Investigator, NSF grant SOC79-0327, 1979-80; NSF grant 285-6041, 1980-82; NSF grant SES-8038866, 1983-84, 1985-86.

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"An Economic-Demographic Model of the Housing Sector," (with B. Hickman and M. Hinz), Center for Research in Economic Growth, Stanford University, 1973.

Invited Conference Presentations:

Wharton Seminar on Applied Microeconomics
"Access Policies with Imperfect Regulation" 1995

Antitrust 1996, Washington D.C.
"Assessing Joint Ventures for Diminution of Competition" 1995

ABA Annual Meeting, Section of Antitrust Law
"Refusals to Deal -- Economic Tests for Competitive Harm" 1995

FTC Seminar on Antitrust Enforcement Analysis
"Diagnosing Collusion Possibilities" 1995

Philadelphia Bar Education Center: Antitrust Fundamentals
:Antitrust--The Underlying Economics" 1995

Vanderbilt University Conference on Financial Markets
"Why Do Christie and Schultz Infer Collusion From Their Data?" 1995

ABA Section of Antitrust Law Chair's Showcase Program
"Discussion of Telecommunications Competition Policy" 1995

Conference Board: 1995 Antitrust Conference
"Analysis of Mergers and Joint Ventures" 1995

ABA Conference on The New Antitrust: Policy of the '90s
"Antitrust on the Super Highways/Super Airways" 1994

ITC Hearings on The Economic Effects of Outstanding Title VII Orders
"The Economic Impacts of Antidumping Policies" 1994

OECD Working Conference on Trade and Competition Policy
"Empirical Evidence on The Nature of Anti-dumping Actions" 1994

Antitrust 1995, Washington D.C.
"Rigorous Antitrust Standards for Distribution Arrangements" 1994

ABA -- Georgetown Law Center: Post Chicago-Economics: New Theories - New Cases? "Economic Foundations for Vertical Merger Guidelines" 1994

Conference Board: Antitrust Issues in Today's Economy
"New Democrats, Old Agencies: Competition Law and Policy" 1994

Federal Reserve Board Distinguished Economist Series
"Regulated Private Enterprise Versus Public Enterprise" 1994

Institut d'Etudes Politiques de Paris
"Lectures on Competition Policy and Privatization" 1993

Canadian Bureau of Competition Policy Academic Seminar Series, Toronto.
"Public Versus Regulated Private Enterprise" 1993

CEPS Symposium on The Clinton Administration: A Preliminary Report Card
"Policy Towards Business" 1993

Columbia Institute for Tele-Information Conference on Competition in Network Industries, New York, NY
"Discussion of Deregulation of Networks: What Has Worked and What Hasn't" 1993

World Bank Annual Conference on Development Economics
"Public Versus Regulated Private Enterprise" 1993

Center for Public Utilities Conference on Current Issues Challenging the Regulatory Process, Santa Fe, NM
"The Economics of Current Issues in Telecommunications Regulation" 1992
"The Role of Markets in Presently Regulated Industries" 1992

The Conference Board's Conference on Antitrust Issues in Today's Economy, New York, NY
"Antitrust in the Global Economy" 1992

"Monopoly Issues for the '90s" 1993

Columbia University Seminar on Applied Economic Theory, New York, NY
"Economic Rationales for the Scope of Privatization" 1992

Howrey & Simon Conference on Antitrust Developments, Washington, DC
"Competitive Effects of Concern in the Merger Guidelines" 1992

Arnold & Porter Colloquium on Merger Enforcement, Washington, DC
"The Economic Foundations of the Merger Guidelines" 1992

American Bar Association, Section on Antitrust Law Leadership Council Conference, Monterey, CA
"Applying the 1992 Merger Guidelines" 1992

OECD Competition Policy Meeting, Paris, France
"The Economic Impacts of Antidumping Policy" 1992

Center for Public Choice Lecture Series, George Mason University Arlington, VA
"The Economic Impacts of Antidumping Policy" 1992

Brookings Institution Microeconomics Panel, Washington, DC,
"Discussion of the Evolution of Industry Structure" 1992

AT&T Conference on Antitrust Essentials
"Antitrust Standards for Mergers and Joint Ventures" 1991

ABA Institute on The Cutting Edge of Antitrust: Market Power
"Assessing and Proving Market Power: Barriers to Entry" 1991

Second Annual Workshop of the Competition Law and Policy Institute of New Zealand
"Merger Analysis, Industrial Organization Theory, and Merger Guidelines" 1991
"Exclusive Dealing and the Fisher & Paykel Case" 1991

Special Seminar of the New Zealand Treasury
"Strategic Behavior, Antitrust, and The Regulation of Natural Monopoly" 1991

Public Seminar of the Australian Trade Practices Commission
"Antitrust Issues of the 1990's" 1991

National Association of Attorneys General Antitrust Seminar
"Antitrust Economics" 1991

District of Columbia Bar's 1991 Annual Convention
"Administrative and Judicial Trends in Federal Antitrust Enforcement" 1991

ABA Spring Meeting
"Antitrust Lessons From the Airline Industry" 1991

Conference on The Transition to a Market Economy - Institutional Aspects
"Anti-Monopoly Policies and Institutions" 1991

Conference Board's Thirtieth Antitrust Conference
"Antitrust Issues in Today's Economy" 1991

American Association for the Advancement of Science Annual Meeting
"Methodologies for Economic Analysis of Mergers" 1991

General Seminar, Johns Hopkins University
"Economic Rationales for the Scope of Privatization" 1991

Capitol Economics Speakers Series
"Economics of Merger Guidelines" 1991

CRA Conference on Antitrust Issues in Regulated Industries
"Enforcement Priorities and Economic Principles" 1990

Pepper Hamilton & Scheetz Anniversary Colloquium
"New Developments in Antitrust Economics" 1990

PLI Program on Federal Antitrust Enforcement in the 90's
"The Antitrust Agenda of the 90's" 1990

FTC Distinguished Speakers Seminar
"The Evolving Merger Guidelines" 1990

The World Bank Speakers Series
"The Role of Antitrust Policy in an Open Economy" 1990

Seminar of the Secretary of Commerce and Industrial Development of Mexico
"Transitions to a Market Economy" 1990

Southern Economics Association
"Entry in Antitrust Analysis of Mergers" 1990
"Discussion of Strategic Investment and Timing of Entry" 1990

American Enterprise Institute Conference on Policy Approaches to the Deregulation of Network Industries
"Discussion of Network Problems and Solutions" 1990

American Enterprise Institute Conference on Innovation, Intellectual Property, and World Competition
"Law and Economics Framework for Analysis" 1990

Banco Nacional de Desenvolvimento Economico Social Lecture
"Competition Policy: Harnessing Private Interests for the Public Interest" 1990

Western Economics Association Annual Meetings
"New Directions in Antitrust from a New Administration" 1990
"New Directions in Merger Enforcement: The View from Washington" 1990

Woodrow Wilson School Alumni Colloquium
"Microeconomic Policy Analysis and Antitrust--Washington 1990" 1990

Arnold & Porter Lecture Series
"Advocating Competition" 1991
"Antitrust Enforcement" 1990

ABA Antitrust Section Convention
"Recent Developments in Market Definition and Merger Analysis" 1990

Federal Bar Association
"Joint Production Legislation: Competitive Necessity or Cartel Shield?" 1990

Pew Charitable Trusts Conference
"Economics and National Security" 1990

ABA Antitrust Section Midwinter Council Meeting
"Fine-tuning the Merger Guidelines" 1990
"The State of the Antitrust Division" 1991

International Telecommunications Society Conference
"Discussion of the Impact of Telecommunications in the UK" 1989

The Economists of New Jersey Conference
"Recent Perspectives on Regulation" 1989

Conference on Current Issues Challenging the Regulatory Process
"Innovative Pricing and Regulatory Reform" 1989

"Competitive Wheeling" 1989

Conference Board: Antitrust Issues in Today's Economy
"Foreign Trade Issues and Antitrust" 1989

McKinsey & Co. Mini-MBA Conference
"Economic Analysis of Pricing, Costing, and Strategic Business Behavior" 1989
1994

Olin Conference on Regulatory Mechanism Design
"Revolutions in Regulatory Theory and Practice: Exploring The Gap" 1989

University of Dundee Conference on Industrial Organization and Strategic Behavior
"Mergers in Differentiated Product Industries" 1988

Leif Johanson Lectures at the University of Oslo
"Normative Issues in Industrial Organization" 1988

Mergers and Competitiveness: Spain Facing the EEC
"Merger Policy" 1988
"R&D Joint Ventures" 1988

New Dimensions in Pricing Electricity
"Competitive Pricing and Regulatory Reform" 1988

Program for Integrating Economics and National Security: Second Annual Colloquium
"Arming Decisions Under Asymmetric Information" 1988

European Association for Research in Industrial Economics
"U.S. Railroad Deregulation and the Public Interest" 1987
"Economic Rationales for the Scope of Privatization" 1989
"Discussion of Licensing of Innovations" 1990

Annenberg Conference on Rate of Return Regulation in the Presence of Rapid Technical Change
"Discussion of Regulatory Mechanism Design in the Presence of Research, Innovation, and Spillover Effects" 1987

Special Brookings Papers Meeting
"Discussion of Empirical Approaches to Strategic Behavior" 1987
"New Merger Guidelines" 1990

Deregulation or Regulation for Telecommunications in the 1990's
"How Effective are State and Federal Regulations?" 1987

Conference Board Roundtable on Antitrust
"Research and Production Joint Ventures" 1990
"Intellectual Property and Antitrust" 1987

Current Issues in Telephone Regulation
"Economic Approaches to Market Dominance: Applicability of Contestable Markets" 1987

Harvard Business School Forum on Telecommunications
"Regulation of Information Services" 1987

The Fowler Challenge: Deregulation and Competition in The Local Telecommunications Market
"Why Reinvent the Wheel?" 1986

World Bank Seminar on Frontiers of Economics
"What Every Economist Should Know About Contestable Markets" 1986

Bell Communications Research Conference on Regulation and Information
"Fuzzy Regulatory Rules" 1986

Karl Eller Center Forum on Telecommunications
"The Changing Economic Environment in Telecommunications: Technological Change and Deregulation" 1986

Railroad Accounting Principles Board Colloquium
"Contestable Market Theory and ICC Regulation 1986

Canadian Embassy Conference on Current Issues in Canadian -- U.S. Trade and Investment
"Regulatory Revolution in the Infrastructure Industries" 1985

Eagleton Institute Conference on Telecommunications in Transition
"Industry in Transition: Economic and Public Policy Overview" 1985

Brown University Citicorp Lecture
"Logic of Regulation and Deregulation" 1985

Columbia University Communications Research Forum
"Long Distance Competition Policy" 1985

American Enterprise Institute Public Policy Week
"The Political Economy of Regulatory Reform" 1984

MIT Communications Forum
"Deregulation of AT&T Communications" 1984

Bureau of Census Longitudinal Establishment Data File and Diversification Study Conference
"Potential Uses of The File" 1984

Federal Bar Association Symposium on Joint Ventures
"The Economics of Joint Venture Assessment" 1984

Hoover Institute Conference on Antitrust
"Antitrust for High-Technology Industries" 1984

NSF Workshop on Predation and Industrial Targeting
"Current Economic Analysis of Predatory Practices" 1983

The Institute for Study of Regulation Symposium: Pricing Electric, Gas, and Telecommunications Services Today and for the Future
"Contestability As A Guide for Regulation and Deregulation" 1984

University of Pennsylvania Economics Day Symposium
"Contestability and Competition: Guides for Regulation and Deregulation" 1984

Pinhas Sapir Conference on Economic Policy in Theory and Practice
"Corporate Governance and Market Structure" 1984

Centre of Planning and Economic Research of Greece
"Issues About Industrial Deregulation" 1984
"Contestability: New Research Agenda" 1984

Hebrew and Tel Aviv Universities Conference on Public Economics
"Social Welfare Dominance Extended and Applied to Excise Taxation" 1983

NBER Conference on Industrial Organization and International Trade
"Perspectives on Horizontal Mergers in World Markets" 1983

Workshop on Local Access: Strategies for Public Policy
"Market Structure and Government Intervention in Access Markets" 1982

NBER Conference on Strategic Behavior and International Trade
"Industrial Strategy with Committed Firms: Discussion" 1982

Columbia University Graduate School of Business, Conference on Regulation and New Telecommunication Networks
"Local Pricing in a Competitive Environment" 1982

International Economic Association Roundtable Conference on New Developments in the Theory of Market Structure
"Theory of Contestability" 1982
"Product Development, Investment, and the Evolution of Market Structures" 1982

N.Y.U. Conference on Competition and World Markets: Law and Economics
"Competition and Trade Policy--International Predation" 1982

CNRS-ISPE-NBER Conference on the Taxation of Capital
"Welfare Effects of Investment Under Imperfect Competition" 1982

Internationales Institut fur Management und Verwaltung Regulation Conference
"Welfare, Regulatory Boundaries, and the Sustainability of Oligopolies" 1981

NBER-Kellogg Graduate School of Management Conference on the Econometrics of Market Models with Imperfect Competition
"Discussion of Measurement of Monopoly Behavior: An Application to the Cigarette Industry" 1981

The Peterkin Lecture at Rice University
"Deregulation: Ideology or Logic?" 1981

FTC Seminar on Antitrust Analysis
"Viewpoints on Horizontal Mergers 1982
"Predation as a Tactical Inducement for Exit" 1980

NBER Conference on Industrial Organization and Public Policy
"An Economic Definition of Predation" 1980

The Center for Advanced Studies in Managerial Economics Conference on The Economics of Telecommunications
"Pricing Local Service as an Input" 1980

Aspen Institute Conference on the Future of the Postal Service
"Welfare Economics of Postal Pricing" 1979

Department of Justice Antitrust Seminar
"The Industry Performance Gradient Index" 1979

Eastern Economic Association Convention
"The Social Performance of Deregulated Markets for Telecommunications Services" 1979

Industry Workshop Association Convention
"Customer Equity and Local Measured Service" 1979

Symposium on Ratemaking Problems of Regulated Industries
"Pricing Decisions and the Regulatory Process" 1979

Woodrow Wilson School Alumni Conference
"The Push for Deregulation" 1979

NBER Conference on Industrial Organization
"Intertemporal Sustainability" 1979

World Congress of the Econometric Society
"Theoretical Industrial Organization" 1980

Institute of Public Utilities Conference on Current Issues in Public Utilities Regulation
"Network Access Pricing" 1978

ALI-ABA Conference on the Economics of Antitrust
"Predatoriness and Discriminatory Pricing" 1978

AEI Conference on Postal Service Issues
"What Can Markets Control?" 1978

University of Virginia Conference on the Economics of Regulation
"Public Interest Pricing" 1978

DRI Utility Conference
"Marginal Cost Pricing in the Utility Industry: Impact and Analysis" 1978

International Meeting of the Institute of Management Sciences
"The Envelope Theorem" 1977

University of Warwick Workshop on Oligopoly
"Industry Performance Gradient Indexes" 1977

North American Econometric Society Convention

"Intertemporal Sustainability"	1979
"Social Welfare Dominance"	1978
"Economies of Scope, DAIC, and Markets with Joint Production"	1977

Telecommunications Policy Research Conference

"Transition to Competitive Markets"	1986
"InterLATA Capacity Growth, Capped NTS Charges and Long Distance Competition"	1985
"Market Power in The Telecommunications Industry"	1984
"FCC Policy on Local Access Pricing"	1983
"Do We Need a Regulatory Safety Net in Telecommunications?"	1982
"Anticompetitive Vertical Conduct"	1981
"Electronic Mail and Postal Pricing"	1980
"Monopoly, Competition and Efficiency": Chairman	1979
"A Common Carrier Research Agenda"	1978
"Empirical Views of Ramsey Optimal Telephone Pricing"	1977
"Recent Research on Regulated Market Structure"	1976
"Some General Equilibrium Views of Optimal Pricing"	1975

National Bureau of Economic Research Conference on Theoretical Industrial Organization

Discussion of "Compensating Variation as a Measure of Welfare Change"	1976

Conference on Pricing in Regulated Industries: Theory & Application

"Ramsey Optimal Pricing of Long Distance Telephone Services"	1977

NBER Conference on Public Regulation

"Income Distributional Concerns in Regulatory Policy-Making"	1977

Allied Social Science Associations National Convention

"Merger Guidelines and Economic Theory"	1990
Discussion of "Competitive Rules for Joint Ventures"	1989
"New Schools in Industrial Organization"	1988
"Industry Economic Analysis in the Legal Arena"	1987
"Transportation Deregulation"	1984
Discussion of "Pricing and Costing of Telecommunications Services"	1983
Discussion of "An Exact Welfare Measure"	1982
"Optimal Deregulation of Telephone Services"	1982
"Sector Differentiated Capital Taxes"	1981
"Economies of Scope"	1980
"Social Welfare Dominance"	1980
"The Economic Definition of Predation"	1979

Discussion of "Lifeline Rates, Succor or Snare?" 1979
"Multiproduct Technology and Market Structure" 1978
"The Economic Gradient Method" 1978
"Methods for Public Interest Pricing" 1977
Discussion of "The Welfare Implications of New Financial Instruments" 1976
"Welfare Theory of Concentration Indices" 1976
Discussion of "Developments in Monopolistic Competition Theory" 1976
"Hedonic Price Adjustments" 1975
"Public Good Attributes of Information and its Optimal Pricing" 1975
"Risk Invariance and Ordinally Additive Utility Functions" 1974
"Consumer's Surplus: A Rigorous Cookbook" 1974

University of Chicago Symposium on the Economics of Regulated Public Utilities
"Optimal Prices for Public Purposes" 1976

American Society for Information Science
"The Social Value of Information: An Economist's View" 1975

Institute for Mathematical Studies in the Social Sciences Summer Seminar
"The Sustainability of Natural Monopoly" 1975

U.S.-U.S.S.R. Symposium on Estimating Costs and Benefits of Information Services
"The Evaluation of the Economic Benefits of Productive Information" 1975

NYU-Columbia Symposium on Regulated Industries
"Ramsey Optimal Public Utility Pricing" 1975

Research Seminars 1973-:

Bell Communications Research (2)
Bell Laboratories (numerous)
Department of Justice (3)
Electric Power Research Institute
Federal Reserve Board
Federal Trade Commission (4)
Mathematica
Rand
World Bank (3)
University of California, San Diego
University of Chicago
University of Delaware
University of Florida
University of Illinois
University of Iowa (2)
Universite Laval
University of Maryland
University of Michigan

Carleton University
Carnegie-Mellon University
Columbia University (4)
Cornell University (2)
Georgetown University
Harvard University (2)
Hebrew University
Johns Hopkins University (2)
M. I. T. (4)
New York University (4)
Northwestern University (2)
Norwegian School of Economics and Business Administration
University of Minnesota
University of Oslo
University of Pennsylvania (3)
University of Toronto
University of Virginia
University of Wisconsin
University of Wyoming
Vanderbilt University
Yale University (2)
Princeton University (many)
Rice University
Stanford University (5)
S.U.N.Y. Albany

VERIFIED STATEMENT

OF

RICHARD G. SHARP

My name is Richard G. Sharp. I am a founder and a Principal of Transport & Management Consultants, Inc. (T&MC), located at 2111 Wilson Boulevard, Suite 700, Arlington, Virginia 22201.

T&MC, which was established in 1989, specializes in transportation economics. Prior to forming T&MC, I was a Vice President of Richard J. Barber Associates, Inc., where I focussed on analysis of freight transportation issues, including merger policy and the extent of competition in freight transport markets. During my 22-year career as a transportation economist, I have analyzed the existence of transport competition in numerous settings, assessing how changes in circumstances affect competition and presenting my findings and conclusions in appropriate forums.

I have testified frequently before the Commission on issues of coal transport markets and transport competition on behalf of both transporters and coal shippers. A more detailed statement of my background and experience is contained in the appendix to this statement.

In this proceeding, I have been asked by Applicants to comment on the competitive impact the proposed merger will have on coal transport, taking into account the recently approved BN/Santa Fe merger and the agreements which have been reached by applicants in both proceedings to address competitive concerns.

INTRODUCTION

Review of Western coal transport markets shows that the proposed UP/ SP merger is pro-competitive in its effects. First, the affiliation offers the same types of benefits as the BN/Santa Fe merger recently approved by the Commission, extending the efficiencies of single-line service from a variety of coal origins to a far greater number of receivers than currently enjoy such service. Second, the merger will allow UP/SP to offer customers a range of coal types and origins more comparable -- although not equal -- to that of BN/Santa Fe. Competition will be intensified as BN/Santa Fe and UP/SP compete to handle an expanded range of multi-source coal traffic. UP/SP will remain a significantly smaller carrier of Western coal than BN, even aside from the additional coal business BN has gained through merging with Santa Fe.

The agreement concluded between Applicants and BN/Santa Fe, moreover, will provide additional competition and expanded coal transport options. Since BN/Santa Fe is and will remain the largest originator of Western coal -- and BN/Santa Fe serves the same mines that generate the bulk of UP's tonnage -- expanding BN/Santa Fe access to destinations currently served only by UP and SP is an exceptionally pro-competitive alternative for shippers. Thus, the merger contains an unprecedented expansion of head-to-head, origin-to-destination transport competition for coal shippers.

BENEFITS OF THE PROPOSED MERGER

A principal benefit of the proposed merger is the expansion of efficient, single-line routings that will be made possible by the expanded network. This benefit is particularly valuable to coal shippers, who depend on efficient turnaround for high utilization of privately owned hopper cars. The proposed merger will broaden coal consumers' choices by giving them single-line or improved access

to a broader range of coal producers. Coal producers will likewise gain single-line or improved access to an expanded array of potential coal customers.

Coal Consumers Will Gain Single-Line or Improved Access to Additional Coal Producers

The existing UP and SP systems serve geographically separate and qualitatively different Western coal origins. UP's primary coal origins are the Powder River Basin mines, where it shares access with BN/Santa Fe.[1] SP's origins are primarily in Utah and Colorado, located mostly in the producing region known as the Uinta Basin. UP originates Utah coal at only one restricted location and does not serve active Colorado mines, while SP does not reach Wyoming or Montana origins.

To varying extents, SP origins in Utah and Colorado compete with Utah mines located on the regional Utah Railway and Colorado/New Mexico mines served by BN/Santa Fe, both of which produce coal more similar to the coal SP originates than to the sub-bituminous coal originated by UP in Wyoming.

The proposed merger will provide UP-served electric utility plants with single-line service from SP-served coal mines. This will be of immediate benefit to utilities, such as Nebraska Public Power, Union Electric and Nevada Power,[2] which currently receive SP-originated coal at UP-served

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[1] The Powder River Basin, the largest source of Western coal, served by both UP and BN/Santa Fe in part and by BN/Santa Fe exclusively in part, is hereafter abbreviated "PRB." The jointly served track in the Southern PRB, served by both UP and BN/Santa Fe, is referred to as the "Joint Line."

[2] Nebraska Public Power District's Gentleman plant, Union Electric's Labadie plant, and Nevada Power's Reid Gardner plant at Moapa, Nevada, each are served by UP and have consumed varying volumes of SP-originated coal. Fieldston 1994 Coal Transportation Manual, pp. 496 and 504, and Department of Energy, Energy Information Administration, Cost and Quality of Fuels for Electric Utility Plants 1994 [hereafter Cost and Quality 1994], pp. 87 and 107. Transport conditions at destination vary among these plants, but in each instance, creation of efficient, single-line UP/SP routes will improve access for SP origin coal.

generating facilities. As utilities consider low-sulfur sources of Western coal as a competitive alternative to Eastern coal origins, the merger will be of potential benefit to those that may wish to tap SP-served mines for coal blending purposes.

Conversely, SP-served utility plants will gain single-line service from the Powder River Basin, greatly expanding the coal sources available to them on a single-line basis. As discussed below, most SP-served utility plants take coal from SP-served mines and few use Wyoming coal. Coal cost and quality differences, reinforced by the added costs of interlining and SP's disinterest in Wyoming coal relative to its own origins, have been major barriers to selecting non-SP coal origins. Eliminating the interline handicap of UP-served Wyoming sources will help receivers promote competition between coal origins. It will extend the reach of UP/SP's single-line service to a network more comparable to that of BN/Santa Fe (important for both future plants and current facilities), and will make the terms of transport from SP and UP origins more comparable. With more equal access to alternate coal sources, customers will have additional incentives to adopt fuel strategies that enable them to use a wider array of coal types.

Generating facilities currently served by both UP and SP and no other railroad[3] will retain competitive access. With one possible exception, they will be served by UP/SP and BN/Santa Fe after the merger, according to the terms of UP's agreement with BN/Santa Fe.[4] These facilities will

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[3] There are no generating facilities served by UP, SP and another railroad.

[4] Facilities affected by the BN/Santa Fe agreement include Sierra Pacific's Valmy, Nevada plant, the Lower Colorado River Authority's plant at Halsted, Texas, and the San Antonio Public Service Company plant at Elmendorf, Texas. The Applicants are discussing with Union Electric arrangements for alternative rail service to the Union Electric plant at Labadie, Missouri, but if a separate agreement is not arrived at, BN/Santa Fe will have the right to serve the plant.

gain competitive, two-carrier, single-line service from the PRB to destination. With both individual mines and the destination point reached by two carriers, this represents the most competitive situation the rail industry has to offer.

Midwestern utility customers that are served by regional or Eastern carriers will gain more direct service from a broad range of Western coal sources. They will be able to negotiate for the most cost-efficient combinations of sources and routings with both the expanded BN/Santa Fe and UP/SP systems. These utilities are beginning to blend low-sulfur Western coals with traditional sources to meet environmental goals. In some cases, the proposed merger will reduce three-carrier hauls (where multi-carrier negotiations and interchange inefficiencies currently inhibit traffic development) to two-line hauls; in other cases, it will make more direct and efficient two-carrier routings available.[5]

Coal Producers Will Gain Single-Line or Improved Access to Additional Markets

Coal producers seeking expanded markets should also benefit from the UP/SP affiliation. Such producers will gain single-line or improved access to additional utility customers. The ability of UP-served mines to bid for business will be enhanced by single line access to SP-served facilities and improved routings to other customers. SP-served mines will benefit from single-line routes to a wide range of UP destinations, and improved routes to other customers. This expanded access to destinations will improve the ability of UP-origin coals to compete with BN/Santa Fe's massive PRB

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[5] Examples would include routings to utility destinations and Great Lakes transfer facilities in Wisconsin, Minnesota and the Michigan upper peninsula. At present, SP routes this traffic via Pueblo and Kansas City (and sometimes St. Louis) to Chicago, where traffic must be interchanged for onward movement for delivery or a subsequent interchange. UP/SP routes will significantly reduce mileage, avoid Chicago and, depending on the specific destination, may eliminate an interchange.

traffic volume and the ability of SP coals to compete with other high-BTU coals in reaching compliance markets. Finally, for UP or SP destinations where coal quality considerations permit a mix of high-BTU and low-BTU coals, the merger will reduce barriers to using both UP and SP sources as complementary fuel additives. It should be noted that where two coals are being used in a complementary fashion, more efficient access to either component of the coal blend will enhance the economics of the combined coal sources.

UP/SP will have every incentive to work with the mines it serves to develop coal transport packages that appeal as broadly as possible to customers on its lines and elsewhere. Coal producers need not fear that UP/SP will favor some coal origins over others.[6] First, competition between high-BTU SP coal and low-BTU UP coal is rare. Second, as the owner (or joint owner) of the rail lines, UP/SP will seek to maximize its return on investment in the lines by encouraging traffic to move over them. For UP to buy lines in order to eliminate traffic on them would be irrational. Efficient coal transportation arrangements also typically require a partnership between the railroad and the coal consumer. The railroad's best interest is to offer good service from whatever origins the customer finds most attractive from a coal cost and quality perspective so traffic volumes will be developed and sustained. Good access to the most desirable coal sources is necessary to interest the coal receiver in a commitment to quality rail service and to encourage long-term customer investments in the rail service (such as customer-owned coal cars and unloading facilities). Failure to respond to customer preferences among origins on its own lines can only discourage traffic development, to the detriment

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[6] Some mines might prefer to have interline barriers shelter them from competition, i.e., to have a carrier that prefers its local mines over mines on another line that could compete strongly for the same users absent transport inefficiencies. Such producers do not have a valid objection to the proposed affiliation.

of the rail carrier. Bad service from the PRB will only lose traffic to BN/Santa Fe's PRB routes; bad service from Colorado/Utah will only lose traffic to the high-BTU origins of BN/Santa Fe or other carriers.

One coal market where improved UP/SP routings may be particularly decisive is the market for steam coal exports to Pacific Rim countries (notably Japan, the Koreas and China). Western coal sources have a small and tenuous presence in the highly competitive Pacific Rim market, currently supplying only about 5 percent of Pacific Rim steam coal import demand.[7] The only Western coal to successfully penetrate this market is high-BTU coal from Colorado and particularly Utah, served predominantly by SP. (Wyoming/Montana sub-bituminous coal, with its low BTU content and greater distances from coal ports, has not been successfully marketed.) SP's circuitous single-line routings via Sacramento to the major West Coast coal port facilities at Los Angeles and Long Beach have not been highly successful, and port capacity and ship size limitations at Northern California ports have rendered SP's northern volume insignificant to date.[8] UP's direct access to Utah origins is very limited and has kept UP from being a substantial originator of export coal. SP-direct and UP-direct movements for Pacific Rim export accounted for only about each in 1994, with

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[7] James L. Van Lanen, "Western U.S. Steam Coal's Potential in Pacific Rim Utility Markets," 10th Pacific Rim Coal Conference (26-28 June, 1995), pp. 4-5. In 1993, U.S. coal exports to Asia (from Eastern as well as Western origins) totaled 19 million tons. This is nine percent of the 211 million tons of steam and metallurgical coal imported to Asia from all sources. U.S. Pacific Rim exports are forecast to increase to only 24 million tons by the year 2010, out of a projected 385 million tons -- a fall in market share to six percent. Department of Energy, Energy Information Administration, Annual Energy Outlook 1995, p. 53.

[8] The northern California ports of Richmond and Stockton combined moved 30,000 to 150,000 tons of coal annually during 1990-1992, comprising only about three percent of the annual Colorado/Utah coal export total. This compares to 2.1 to 3.0 million tons moving each of those years over Los Angeles-Long Beach. Fieldston 1994 Coal Transportation Manual, pp. 412-415.

the remaining Western export coal total of dependent on interline arrangements.

The UP/SP affiliation will introduce the efficiencies of single-line service to the West Coast coal export markets in a much more substantial manner than currently, making the U.S. a better player in this difficult market. The vast majority of Western export coal has been interchanged with UP at Provo for onward movement to the ports of Los Angeles and Long Beach either from origins on the SP or the local Utah Railway. The merger will allow more remote SP-originated export coal to move in efficient single-line service and reduce operating conflicts adversely affecting the Utah Railway's Provo interchanges, enhancing the marketability of Western coal from both origins in the intensely competitive export market.

Export coal shippers located on the Utah Railway will experience an enhancement of transport options. UP/SP will continue to provide interline service with the Utah Railway and congestion at Provo should be reduced. (UP/SP will have every incentive to provide cost-efficient service for coal originated on the Utah Railway, because this highly demand-elastic traffic simply will not move if Pacific Rim buyers find movements to port inefficient or not price-competitive.) In addition, Applicants' agreement with BN/Santa Fe will provide the Utah Railway with a separate connection to California ports. The agreement will provide BN/Santa Fe with a direct route from Utah to the Port of Richmond and a variety of California industrial coal users which is equivalent to the route now available through SP. It will also provide independent access for coal-consuming facilities located on the Central Corridor route. For BN/Santa Fe, Utah Railway-origin coal traffic to the export, Northern California and Central Corridor markets will represent a new marketing opportunity.

ABSENCE OF ANTI-COMPETITIVE EFFECTS

Competition between Western coal transporters is constrained by the quality differences in the coals of different regions and the limited access some rail carriers have to a range of coal types. Different transporters having access to different types of coal, each with their separate market niches, does not constitute the most vigorous transport competition. Rather, the most vigorous competition comes when two broad rail networks can each originate a range of coals and efficiently deliver the types of coal selected by customers to numerous destinations. The UP/SP merger and BN/Santa Fe settlement create this condition. The charge that the proposed UP/SP affiliation would harm competition by reducing major Western coal carriers from three to two is ill conceived. To the contrary, competition will be intensified.

For Western coal traffic, two-carrier service at destination is found only at a few locations. Two-carrier service at origin is essentially limited to a portion of the PRB. In consequence, head-to-head origin-to-destination competition is relatively uncommon. More specifically, the existing competition between UP and SP is exceptionally limited, whether viewed in terms of coal source competition or service at particular points. Given this fact, and given the merger-created expansion of two-carrier competition and service improvements discussed above, the merger will enhance, not diminish, competition.

Competition Between Coal Originated by UP and SP is Limited

Western coal is produced from four main coal regions: (1) the Powder River Basin in Eastern Wyoming and Montana, (2) the Hanna Basin and the adjacent Green River-Ham's Fork (GR-HF) area in Southern Wyoming, (3) the Uinta Basin in Colorado and Utah, and (4) the San Juan/Raton Basins,

located principally in New Mexico.[9] Each area produces coal with different quality characteristics (e.g., BTU and sulfur content). Further differentiating the coals are their minehead prices (driven by the comparative minability of the coal seams) and locations.

As shown in Table 1, the PRB has by far the greatest production of all the Western coal producing areas. The PRB produces low sulfur, low BTU sub-bituminous coal. The mines are easily excavated surface mines, so the minehead price of the coal is low. (See Table 2, which shows coal characteristics by state.) Part of the Wyoming portion of the PRB is served by the Joint Line, meaning that both BN/Santa Fe and UP have access to all mines. BN/Santa Fe serves the rest of the PRB exclusively, covering mines in both Wyoming and Montana.

Table 1: Major Western Coal Producing Areas

Area	State	Principal Rail Carriers	1994 Production (million tons)[10]
Southern Powder River	WY	BN/Santa Fe, UP	163.3
Northern Powder River	WY, MT	BN/Santa Fe	80.3
Hanna/GR-HF	WY	UP	20.0
Uinta	CO, UT	SP Utah Pwy.	49.7
San Juan/Raton	NM	BN/Santa Fe	28.0

[9] This listing does not include lignite, which is all produced and consumed locally.

[10] PRB tonnage was separated between Southern and Northern Powder River Basin by compiling production at mines located on the Joint Line and on BN/Santa Fe exclusively. Hanna Basin/GR-HF tonnage is the sum of tonnage from Carbon, Lincoln and Sweetwater Counties, Wyoming. Uinta Basin is represented by all Colorado and Utah coal tonnage. San Juan/Raton Basin figures are New Mexico production totals. All data from Department of Energy, Energy Information Administration, Coal Industry Annual 1994, Tables 4 and 13.

The Hanna Basin/GR-HF area, located in Southern Wyoming, is served by UP. It produces less than a tenth as much coal as the Powder River Basin. The coal produced in this area is more expensive than PRB coal, largely because it is mostly produced in strip mines with comparatively narrow, sloping and/or deep seams. Its BTU content is only modestly higher than PRB coal and sulfur content is comparable. Given higher production costs, the Hanna Basin/GR-HF coal is mostly sold locally, in minemouth operations or where short, low-cost truck or rail hauls can make up for higher minehead costs.

The Uinta Basin is located in Northeastern Utah and Northwestern Colorado. It is served by SP and by the Utah Railway.[11] Uinta Basin coal is produced in underground mines. It is much higher in BTU content than the PRB and Hanna/GR-HF coals, with only slightly higher sulfur content. It is far more expensive at minehead than coals from the Wyoming-Montana regions.

Table 2: Western Coal Characteristics by State[12]

State	Sulfur (lbs./million BTU)	Heat Content (BTU/lb.)	Minehead Price
Colorado	.42	10,963	$19.76
Utah	.40	11,618	$19.27
New Mexico	.72	9,520	$23.29
Montana	.59	9,033	$10.39
Wyoming	.41	8,634	$6.83

The San Juan and Raton basins are the primary basins in New Mexico. The New Mexico coals are a mix of bituminous and sub-bituminous, with a wide range of qualities, some of which are

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[11] UP serves one coal origin at Sharp, Utah, located on the fringe of the Uinta Basin.

[12] Cost and Quality 1994, p. 7, and Coal Industry Annual 1994, Table 80.

competitive with Colorado/Utah origins. The San Juan/Raton Basins are served by BN/Santa Fe. Like Hanna/GR-HF coal, lower quality San Juan/Raton production is mostly consumed locally.

SP, serving the Uinta Basin, is the principal originator of Colorado and Utah coals. In 1994, SP originated a total of in these two states (in Colorado and in Utah).[13] The Utah Railway also serves the Utah portion of the Uinta Basin and is the second largest originator of Utah coals. It originated about in 1994, approximately of Utah rail originations of coal in 1994.[14] UP does not reach the core Uinta Basin mining areas. It is a very minor originator of coals from Utah (of the Utah Railway) and does not serve Colorado coal mines.[15]

Most of the coal UP originates is sub-bituminous coal from the Southern Powder River Basin, where UP shares access with BN/Santa Fe. In 1994, this traffic amounted to . An additional were originated at UP-exclusive points in the Hanna Basin/Green River-Ham's Fork area in Southern Wyoming (where the majority of production is consumed at minemouth or locally trucked). Only about of UP-hauled Southern Wyoming coal were shipped beyond the state.[16]

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[13] SP 1994 coal traffic printout.

[14] SP and UP coal traffic printouts.

[15] In 1994, UP originated of coal in Utah.
. UP 1994 coal traffic printout.

[16] Id. Aside from the Western coal traffic discussed in the text, UP coal traffic printouts indicate that some former MPRR and CNW origins generated a modest amount of local, non-Western coal in scattered areas.

The SP-originated Colorado and Utah coals are for the most part consumed in different markets than the Wyoming coals originated by UP. The SP coals that have been marketed successfully are low in sulfur and high in BTU content. For example, in 1994, Utah coal marketed to utilities averaged .40 pounds of sulfur per million BTU with a heat content of 11,618 BTUs per pound and Colorado coal averaged .42 pounds of sulfur per million BTU and 10,963 BTU per pound.[17] (See Table 2.) Minehead prices, however, tend to be high, due to underground mining and/or relatively narrow and/or deep seams that inhibit efficient strip mining. In 1994, average minehead prices were $19.76 in Colorado and $19.27 in Utah.[18]

In contrast, UP-originated Wyoming coals, dominated by sub-bituminous coal from the Powder River Basin, tend to be low in sulfur, but also low in BTU content. In 1994, Wyoming coals consumed by electric utilities averaged .41 pounds of sulfur per million BTU (similar to the Colorado/Utah product), but had an average heat content of only 8,634 BTU per pound.[19] Thus, the average energy content of Wyoming coal was only 79 percent of the average Colorado coal and only 74 percent of the average Utah coal. PRB coal also has a low minehead cost, as a result of the coal's occurrence in surface or near-surface seams that are economically mined through surface-mining techniques. Average Wyoming minehead prices were $6.83 per ton in 1994, including some

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[17] Cost and Quality 1994, p. 7.

[18] Coal Industry Annual 1994, Table 80.

[19] Cost and Quality 1994, p. 7.

underground coal mined outside of the PRB,[20] and PRB prices were estimated in 1994 to be $4-$5 per ton.[21]

Because most utility generating plants are designed to burn a single, consistent coal, and the SP-originated coal is quite different than the UP-originated coal, most coal users have opted for one or the other type. These differences in coal quality and minehead price are reinforced by geographic factors. Colorado and Utah coals dominate their local markets, while Wyoming and Montana have a similar local advantage. To demonstrate, in 1994, utilities in Colorado and Utah consumed a total of only 5.1 million tons of coal from Wyoming and Montana versus 25.4 million tons of Colorado/Utah coal, while no Colorado or Utah coal was consumed in either Wyoming or Montana.[22] And, because of the substantial minehead cost differences noted above, Colorado/Utah coals tend to be competitive only where the transport distance is substantially shorter than for PRB coals (such as in Colorado, Utah and Nevada) or where single-line service is available from Colorado/Utah origins but not from the PRB. In addition, Colorado/Utah coals have enjoyed some limited success as low-sulfur blending additives where preexisting facility design contemplating a high-BTU fuel penalizes a low-BTU product (a factor in some coal conversion markets such as Florida, Georgia and Kentucky).

Where transport costs and service conditions are equal, however, PRB coal's initial minehead cost advantage is difficult to overcome, even in coal blending markets. For coal delivered to Midwestern markets at equal transport costs of $11.00 per ton, Powder River coal would have a 27

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[20] Coal Industry Annual 1994, Table 80.

[21] Cost and Quality 1994, p. 6.

[22] Id., pp. 44, 46-48.

percent cost advantage over Colorado/Utah coals measured in cost per ton and about a seven percent advantage in terms of delivered cost per million BTU.[23] In consequence, the Colorado/Utah coal presence in Midwestern markets is limited. Its deliveries range from under one percent of the volume of PRB deliveries in Minnesota and Iowa to only about 15 percent of PRB deliveries in Illinois.[24]

Data on utility coal use in 1994 show that 85 percent of all facilities using Western coal -- 126 of 149 power plants -- used either Colorado/Utah coal or Montana/Wyoming coal, but not both. The results are almost identical in terms of tonnage. Fully 85 percent of Montana/ Wyoming electric utility tonnage is consumed at facilities that do not burn any Colorado or Wyoming coal. Similarly, some 83 percent of Colorado/Utah coal tonnage delivered to electric utilities is consumed at facilities that use no Montana or Wyoming coal whatsoever.

The modest number of facilities using both Western coal sources typically are using one (or both) in minor proportions. Of the 23 generating facilities that in 1994 used any mixture of Utah/Colorado and Montana/Wyoming coals, only eight -- a mere 5.4 percent of all facilities using Western coal -- used each source for more than five percent of their coal burn. Where one or both types of Western coal are used in such small proportions (often in combination with local, non-Western sources), it is not apparent that the two coals are competing. Rather, the small-volume source (or sources) is generally, if not always, a complementary additive to the primary source. In any event, the total coal volumes represented by the smaller source, where both origins are used, are

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[23] Ronald L. McMahan, Resource Data International, "The Changing Face of U.S. Coal," 10th Pacific Rim Coal Conference (June 1995), p. 11. This estimate uses a Colorado/Utah minehead price figure well below the averages compiled by the Department of Energy, and thus may significantly understate the PRB delivered price advantage.

[24] Cost and Quality 1994, pp. 44-48.

of very limited significance -- amounting only to 1.3 percent of Western coal consumed at electric utility facilities. (Also, because BN/Santa Fe is the larger originator of Wyoming and the sole originator of Montana coals, only a portion of the small overlap between Colorado/Utah and Wyoming/Montana coals involves both SP and UP traffic.)

An historical perspective of the market roles of UP-served and SP-served coals also indicates limited competition between the two coal types. Fuel switching from year to year is quite modest. The overwhelming majority of facilities that used Powder River coal exclusively in the 1980s continue to do so, and facilities that relied on Colorado/Utah coals also continue to do so. Of 41 plants using only PRB coal in 1988, 37 in 1994 used 100% PRB coal, two used more than 98% PRB coal, one used 86% PRB coal, and one used 70% PRB coal. Every one of the 13 plants that used Colorado and/or Utah coal exclusively in 1988 still use only Colorado/Utah coals in 1994.[25]

The form of transport competition that exists prior to finalization of plant location, fuel and boiler design will not be impacted by the proposed merger. Utilities and other consumers will maintain the option of designing their facilities to use types of coals that originate on two or more carriers (and, in many cases, the option of selecting an alternate fuel type), will continue to be able to site their facilities to take advantage of transport competition, and will retain the ability to negotiate long-term transport contracts before final commitment to facility design and location.

In summary, the UP/SP merger will not lessen what little competition exists today between Colorado/Utah and Wyoming/Montana coals. To the contrary, it will significantly increase the range over which each railroad's coal origins can compete with coals of similar characteristics and, where

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[25] Department of Energy, Energy Information Administration, Cost and Quality of Fuels for Electric Utility Plants 1988, pp. 76-126, and Cost and Quality of Fuels for Electric Utility Plants 1994, pp. 58-111.

coal characteristics permit, with each other. The merger will not remove the high barriers to competition that result from coal quality differences or insurmountable differentials in minehead price. But, to the extent that selection of coal origins is prejudiced by single-line accessibility to one origin versus interline service to the other, the formerly interlined coal sources will become more competitive. That is, UP-served Wyoming coal origins will become more competitive with SP origins to SP-served destinations, and SP-served coal origins will become more competitive with UP-served origins to UP-served destinations. Customers that now have two-carrier UP and SP destination service and will maintain two-carrier service via the BN/Santa Fe agreement will particularly benefit. They will have single-line access to all SP Colorado/Utah origins and single-line access to both UP and BN/Santa Fe PRB origins (and to any UP or BN/Santa Fe origins outside the PRB that might be of interest). The resulting expansion of source competition is significant.

Competition between UP and SP at Coal-Consuming Points is Limited, and Will be Preserved and Expanded by Competitive Access Granted to BN/Santa Fe

In very few cases are UP and SP in a position to compete to serve the same coal destination. This is not surprising, given the limited competitiveness of UP and SP coal origins and the fact that utility siting decisions are often made to secure access to desired sources of supply. In fact, as demonstrated below, competition has not been very active in the few cases where it would be possible. This, again, results from the limited competitiveness of the coal sources served by the two carriers. The competitive access granted to BN/Santa Fe will enhance effective competition, because BN/Santa Fe serves coal sources that are competitive to both UP sources and SP sources. These points are amply illustrated in the discussion below, which details the competitive situation of each utility plant now served by both UP and SP.

The San Antonio Public Service Company's Deely/Spruce facility is currently served by both

UP and SP. (SP serves the plant directly and had granted UP access via trackage rights.) The plant, however, was designed to burn low-BTU coal and has taken its coal from PRB sources. Thus, high-BTU coal from SP's Colorado and Utah origins has not been a competitive factor.

The competitive access granted to BN/Santa Fe will be a major expansion of competitive options at the Deely/Spruce facility. Post-merger, the facility will have (1) destination service by two carriers with single-line service to jointly-served mines in the PRB, and (2) single-line BN/Santa Fe service to Wyoming/Montana mines beyond the Joint Line. Also, should conversion to high-BTU sources ever be considered, the facility will have (3) single-line UP/SP service to Colorado/Utah mines, and (4) single-line BN/Santa Fe service to New Mexico (and some Colorado) coals that are competitive with Colorado/Utah sources. This is substantially greater transport competition than exists today.

Another utility destination, Lower Colorado River Authority's Seymour-Fayette plant, located on the UP at Halsted, Texas, has the right to receive service from SP via trackage rights when the current contract cycle expires. The Applicants have agreed to honor this commitment by opening the facility to BN/Santa Fe. This accomplishes the same expansion of competitive alternatives as described for Deely/Spruce.

Sierra Pacific's Valmy power plant at Valmy, Nevada, can be served by both UP and SP. However, the plant has long received coal solely from UP's Southern Wyoming and Sharp, Utah, origins for delivery by UP. A review of data filed monthly with the Federal Energy Regulatory Commission ("FERC") indicates that Valmy has taken coal from only UP-served origins since before 1983. All of the coal currently received is under contracts expiring in 2003 and 2007.[26] Thus, SP

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[26] Data file on FERC Form 423.

origins simply have not proved themselves to be competitive. (Most SP sources are more distant from this station than the UP sources used.) The Applicants' agreement with BN/Santa Fe will provide two-carrier access to the facility, and will expand competitive options. The plant will continue to have single-line access to SP coal origins via the merged system. It will retain UP/SP access and gain independent BN/Santa Fe access to Utah Railway origins. In addition, the facility will gain single-line access via BN/Santa Fe (and retain single-line access via UP/SP) to PRB origins, should the facility ever decide to switch to PRB coal. This is a clear expansion of competitive alternatives beyond any hypothetical past competition between the UP routings which have carried all the traffic and theoretically possible SP routings, which have consistently failed to carry any coal to Valmy.

Geneva Steel at Geneva, Utah, served by both UP and SP, will likewise gain BN/Santa Fe access to its facility after the merger. SP has been able to furnish some suitable metallurgical coal to the plant from its Colorado origins. In 1993, SP also developed backhaul traffic from its Utah coal origins to Midwestern utilities using hopper capacity available from taconite movements to Geneva from Minnesota. UP competed for the taconite traffic, but with its paucity of Utah/Colorado origins was not able to offer comparable backhaul coal traffic arrangements to the Midwest.

In assessing Geneva Steel traffic and related backhaul coal transport arrangements, the merger will (1) place UP/SP in a similar position to the position SP is in today, but with more efficient and extensive routings to Midwestern markets, and (2) place BN/Santa Fe in a more competitive position than UP is in presently. That is, UP/SP will be in a post-merger position to deliver coal to Geneva (mostly metallurgical coal received from Eastern carriers), deliver taconite, and develop a variety of coal backhaul opportunities from Colorado/Utah origins. Its backhaul movements, moreover, will

be able to take advantage of efficient routings via North Platte and avoid expensive Chicago-area interchanges for customers like those now served by SP's much more circuitous routes. BN/Santa Fe, like UP today, will be able to provide coal deliveries to Geneva and to deliver taconite. Like UP, its backhaul options in the immediate Geneva area (principally involving Utah Railway origins) will be somewhat limited. However, its highly efficient routings to and from taconite origins near Duluth, its extensive Wyoming and Montana origins, and its New Mexico coal sources will give it ample opportunities to develop complementary transport arrangements that are not available to the current UP system. Thus, post-merger, Geneva will have access to two systems able to offer much more extensive single-line service than is available from the present carriers. This will allow increased efficiencies both for transporting coal and other inputs, as well as for shipment of steel materials produced at the plant.

In Missouri, UP and SP both serve Union Electric's Labadie plant. Limitations on the SP route require SP-originated coal traffic to proceed past the plant, into the St. Louis terminal area, and back out to the facility. While SP access is thus inferior to the UP's direct route, it does represent a transport option and arrangements are being made to preserve two-carrier access.[27] The Applicants' BN/Santa Fe agreement preserves current and future competitive options for utilities that have had some degree of two-carrier service at the facilities discussed above. In fact, the remedy broadens the competitive options for coal beyond what exists today.

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[27] See footnote 4 above.

Foreclosure of Coal Origin Competition is Not an Issue

In the BN/Santa Fe merger, there were several situations in which PRB coal reached by both UP and BN was consumed at destinations served by Santa Fe, BN's merger partner. Although reaffirming its prior holdings that such a situation could lead to foreclosure of the non-merger origin carrier under certain circumstances, the ICC did not find, on the facts, a loss of competition that justified imposing corrective conditions on BN/Santa Fe.

The UP/SP affiliation does not present even such situations as arose in BN/Santa Fe. Unlike Santa Fe, SP does not exclusively serve utilities that have relied on coal from jointly-served UP-BN origins. There can be no concern for loss of origin competition through foreclosure, because there has been no discernible origin-carrier competition for SP's exclusively-served facilities.[28]

The same is true for UP-served utility locations. To the extent that exclusive service may provide any upstream foreclosure opportunity, UP has been in a position, pre-UP/SP merger, to favor its own substantial coal origins. Moreover, UP is the line-haul carrier to most of the coal destinations that it serves, rather than being in the position of a short-haul terminating carrier that would receive modest compensation from either of competing origin carriers. This situation will not be changed by the proposed affiliation.

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[28] Apart from Central Power & Light's Coleto Creek, Texas, facility (which uses SP-origin Colorado coal, along with a small volume of imports received via the Gulf of Mexico), SP-exclusive destinations are located in Colorado and Arizona and consume local coals. SP-served facilities include Public Service Company of Colorado's Cameo and Cherokee plants, TriState G & T Association's Craig, Colorado, plant, Colorado Springs Utilities' Drake plant, Arizona Electric Power Cooperative's Apache plant, and Tucson Electric's Irvington plant. Fieldston 1994 Coal Transportation Manual, pp. 506-08. Local truck hauls compete with SP traffic at some locations, and distant PRB sources are not competitive at these plants with nearby Colorado and New Mexico origins.

At the coal origins, the competitive situation will also remain unchanged. UP/SP will continue to face competition for all of its Powder River Basin origins. SP coal origins are exclusively served and will remain exclusively served. Hence, under the foreclosure theory, the merged UP/SP system will not even have a theoretical opportunity to freeze out any competing carrier from a common origin with SP.[29]

PRO-COMPETITIVE RESPONSE TO BN/SANTA FE

Although remaining a smaller coal originator, the combined UP/SP system will more closely approximate BN/Santa Fe's access to a mix of jointly-served and exclusively-served coal originations, and will be better able to offer coals with a range of characteristics.

BN alone handled 172 million tons of coal in 1994.[30] Almost all of this traffic originated in the Powder River Basin. The affiliation with Santa Fe brings the BN/Santa Fe total to about 185 million tons.[31] In contrast, UP (including all WRPI tonnage) handled 129 million tons of coal in 1994, including non-Western coal tonnage in the MPRR service area and some Western tonnage received from BN.[32] In 1994, SP handled 29 million tons of coal, a modest percentage of which was interlined with UP.[33] The affiliation with SP thus would have brought the UP/SP total to less than 160 million

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29 "The SP has no railroad competition at virtually all of its origins." Id., p. 170.

30 Railco Associates, Inc., Coal-Rail Update (Aug. 31, 1995), p. 16.

31 Id., p. 27.

32 Id., p. 23. The small volume of CNW's local Midwestern traffic is not included in these totals.

33 Id., p. 28.

tons in 1994, with UP/SP Western coal originations below that. Post-merger, UP/SP Western coal volume will remain considerably less than BN/Santa Fe tonnage, but will be more comparable.

In 1994, about 80 million tons of coal were produced at Wyoming/Montana PRB mines exclusively served by BN.[34] Santa Fe-served mines add approximately another 13 million tons. Thus, together, BN and Santa Fe exclusively served mines producing at least 93 million tons.[35] The production in these areas is about 56 percent of the volume from mines served via the Joint Line (about 163 million tons)[36] and over half of the Western coal (excluding lignite) that is not produced on the Joint Line.

In contrast, Western mines served by the UP on other than the Joint Line produced 20 million tons in 1994,[37] an increment of only 12 percent over the tonnage produced on the Joint Line and only 11 percent of the non-Joint Line Western coal production.[38] Much of this coal was poorly competitive from a cost and quality standpoint and was only consumed locally (a significant portion at minemouth); UP transported under half of this production. The production of Colorado/Utah region coal was 49.7 million tons in 1994,[39] of which SP originated under 30 million tons. While

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[34] Department of Energy, Energy Information Administration, Coal Industry Annual 1994, Table 13; Fieldston 1994 Coal Transportation Manual, pp. 35, 44 and 45.

[35] To be conservative, New Mexico coal production deemed accessible to Santa Fe was limited to Santa Fe's actual traffic volume.

[36] Id.

[37] The total for Carbon, Sweetwater and Lincoln counties in Wyoming. Department of Energy, Energy Information Administration, Coal Industry Annual 1994, Table 4.

[38] Excluding lignite, which is consumed locally in Texas and the Dakotas.

[39] Id.

modest compared to the total production, Colorado/Utah coal accounts for 28 percent of Western coal production outside of the Joint Line.

Together the non-Joint Line production in the Colorado/Utah area served by SP and the Southern Wyoming area served by UP amounted to about 69.7 million tons in 1994 -- well below the 93 million tons exclusive to BN/Santa Fe. Again note that a significant volume of this coal is consumed at minemouth or carried in local service by trucks or regional and private railroads. Nonetheless, the combination of areas served by UP and by SP, though only about 40 percent of total non-Joint Line Western coal production, narrows the gap between production available to BN/Santa Fe and that accessible to the next larger competitor.

Without the UP/SP affiliation, there is a substantial imbalance in rail system size in the West. SP is less than half the size of BN/Santa Fe in terms of system mileage, and concerns have been expressed about its ability to compete with its larger rivals. UP is about two-thirds BN/Santa Fe's size in mileage. A similar imbalance exists in terms of traffic volumes. After the UP/SP affiliation, and taking into account Applicants' agreed trackage rights and line sales to BN/Santa Fe, the two systems will be of nearly equivalent size.

The discrepancy in the current system size of the Western carriers is reflected in comparative coal transport capabilities. In addition to the differences in access to coal sources just described, the separate SP and UP systems have substantially inferior access to utility coal consumers. Among utilities now consuming Western coal, BN/Santa Fe serves some 43 facilities (excluding plants consuming local coal/lignite resources). In contrast, SP serves ten coal-fired power plants, while UP serves 34. Taking into account jointly-served facilities and the trackage rights granted as a result of

both merger applications, post-merger access to utility coal traffic by BN/Santa Fe and UP/SP will be essentially equal.

CONCLUSIONS

The UP/SP affiliation and the associated agreements with BN/Santa Fe will significantly increase the coal transport competition that exists today. The merger will create a UP/SP much more capable of matching BN/Santa Fe coal service offerings than are either UP or SP today. Two-carrier access will be preserved wherever it now exists, and that access will be to two expanded systems offering more single-line coal source options than are currently available with UP and SP as independent carriers. Thus, the UP/SP merger, as conditioned by the settlement agreement with BN/Santa Fe, is strongly in the interest of coal producers and consumers, and thus of energy users and the general economy throughout the Western United States.

VERIFICATION

District of Columbia) ss:

Richard D. Spero, being duly sworn, deposes and says that he has read the foregoing statement, knows the contents thereof, and that the same are true as stated:

Richard D. Spero

Subscribed and sworn to before me this 20 th day of November, 1995.

Notary Public, D. C.

My Commission expires [illegible] Columbia [illegible] 14, 1999

APPENDIX
WITNESS QUALIFICATIONS
OF RICHARD G. SHARP

The following pages describe my educational background, professional experience and affiliations, topics of research and publications. Also listed are regulatory proceedings in which I have participated.

I received a Bachelors degree from Harvard University in 1963 and a Masters of Public and International Affairs degree from the Woodrow Wilson School of Public and International Affairs at Princeton University in 1965.

I am a founder and Principal of Transport & Management Consultants, Inc. Established 1989, T&MC provides analysis and management assistance to the transportation industry. T&MC specializes in regulatory analysis, strategic planning, marketing and pricing, cost and profit measurement, organizational restructuring and information systems for railroads and other transportation industries. It is located at 2111 Wilson Boulevard, Suite 700, Arlington, Virginia 22201.

Earlier this year, I testified on competitive issues in the BN/Santa Fe proceeding (Finance Docket No. 32549) on behalf of two utility coal receivers affected by that merger. Since founding T&MC, I have conducted numerous transport market analyses for rail industry clients, evaluated electric utility coal procurement and transport options in the context of ICC proceedings, and have assessed world coal trade and its impacts on U.S. west coast exports. I also assisted major rail U.S. carriers with adaptation of management systems to be more responsive to management needs of market oriented railroads. I have conducted several studies for international rail industry clients. I

have undertaken research on the information systems needs of the U.S. short line railroad industry relating to electronic data interchange, cargo tracking, and management information. I also have performed several studies of transport markets and competition in the intercity bus industry.

Prior to founding T&MC, Inc., I worked at Richard J. Barber Associates, Inc., successively holding the positions of Senior Analyst, Assistant Vice President and Vice President. While at that firm, I conducted marketing and pricing policy studies, assessments of information systems to support marketing strategies, and analysis of acquisitions, particularly in the rail industry. I testified frequently in rate and merger proceedings, including the merger of UPRR with WP and MPRR and the merger creating CSX Transportation. On numerous occasions, I evaluated coal transportation markets and prices, including assessment of trends in export coal traffic and their prospective impact on coal tariff levels.

I authored studies and provided expert testimony on competitive ramifications of rail transport developments in coal, intermodal, and other commodity markets. This included examinations of merger impacts, market dominance and rate reasonableness, and participation in traffic diversion studies. I also conducted rail management studies in the areas of marketing, staffing and evaluation of new business opportunities. While at Barber Associates, I also analyzed oil pipeline, natural gas pipeline, barge and telecommunications industries for both users and suppliers.

I have conducted studies for the World Bank, the U.S. Department of Transportation, U.S. Department of Defense, U.S. Department of Commerce Trade and Development Agency, the U.S. Agency for International Development, United States Information Service, the Atomic Energy Commission/Energy Research and Development Administration, the Environmental Protection Agency, the Small Business Administration/Office of Minority Business Enterprise, agencies of the

governments of Kazakhstan, Thailand, Malawi, Botswana, Swaziland and Lesotho, and railroads in Kazakhstan, Zimbabwe, Mozambique, and Tunisia.

I am a member of the Rail Applications Special Interest Group, Operations Research Society of America and the Transportation Research Forum. I have authored the following recent articles and papers:

T.F. Masocha and R. Sharp, "Improving Profitability and Cost Management Among African Railways," *TRF Proceedings* (November 1994).

R. Sharp, "Review: Jane Holt (The World Bank), *Transportation in the Russian Federation*," TRF Newsletter (March-April 1994).

R. Sharp, "Cost Analysis in the African Railroad Environment," TRF Cost Analysis Newsletter (Fall 1993).

M. Lawrence and R. Sharp, "Short Lines and Regionals: Computerization Takes Hold," Railway Age (March 1993), pp. 58-62.

M. Lawrence and R. Sharp, "Preparing Small Railroads for the 21st Century: An Examination of Progress in Automation and Seamless Transportation" (1992). Paper presented to the American Short Line Railroad Association 1992 Operations and Mechanical Annual Meeting and distributed to ASLRA members and other short line and regional freight railroads.

R. Sharp, "William B. Tye: The Transition to Deregulation: Developing Economic Standards for Public Policies," Book Review, Journal of the Transportation Research Forum (1992), Volume XXXII, Number 2, pp. 422-44.

M. Lawrence and R. Sharp, "Freight Transportation Productivity in the 1980s: A Retrospective," Journal of the Transportation Research Forum (1991) Volume XXXII, Number 1, pp. 158-69. [Also presented to the 1992 American Railroad Congress.]

R. Sharp, "The Clean Air Act Amendments: Impacts on Rail Coal Transportation," Public Utilities Fortnightly (Mar. 1, 1991).

M. Lawrence and R. Sharp, "Short Line and Regional Railroad Computerization: Management and Economic Implications" (1990). Paper presented to the Transportation Research Forum 1990 Annual Meeting and the American Short Line Railroad Association.

M. Lawrence and R. Sharp, "Rail Profit Responsibility and Profit Measurement: Reorienting Departmental Structures and Information Systems to the Contemporary Deregulated Railroad Environment," Journal of the Transportation Research Forum (1989) Volume XXX Number 1, pp. 38-46. Reprinted in Pegasus: The Journal of the Chartered Institute of Transport (Bulawayo, Zimbabwe), Volume 2, No. 2, pp. 4-12, and Volume 2, No. 3, pp. 5-8 (1994).

I have participated in the following regulatory proceedings, performing analysis and, in most cases, testifying.

Interstate Commerce Commission

Burlington Northern Inc. and Burlington Northern Railroad Company -- Merger and Control -- Santa Fe Pacific Corporation and The Atchison, Topeka and Santa Fe Railway Company, Finance Docket No. 32549. [Assessment of competitive impact of merger on coal traffic to Houston Lighting and Power and Southwestern Public Service.]

Degussa Corporation v. Southern Pacific, et al., Docket No. 40903. [Assessment of competition for transport of carbon black.]

Bituminous Coal -- Hiawatha, Utah to Moapa, Nevada, Docket No. 37038 and Aggregate Volume Rate on Coal -- Acco, Utah to Moapa, Nevada, Docket No. 37409 [Consolidated]. [Testimony on rate reasonableness issues.]

Adequacy of Intercity Motor Common Carrier Passenger Service, Ex Parte No. MC-95 (Sub-No. 8). [Requirements for regulation in the intercity bus industry.]

Cabot Corporation v. Southern Pacific Transportation Company, CSX Transportation Inc., et al., Docket No. 40464. [Competitive issues in rate proceeding.]

Georgia Power Company, et al. v. Southern Railway Company and Norfolk Southern Corporation, Docket No. 40581. [Competitive issues in rate proceeding.]

Adirondack Transit Lines, et al. v. Greyhound Lines, Inc., Docket No. 40745. [Competitive issues underlying reduced fare tariff.]

Exxon Coal USA, et al. v. Norfolk Southern Corporation, Docket No. 40424. [Competitive issues in rate proceeding.]

Norfolk & Western Railway Co. and Baltimore & Ohio Railroad Co. -- Control -- Detroit Toledo & Ironton Railroad Co., Finance Docket Nos. 28499 (Sub-No. 1F) and 28676 (Sub-No. 1F). [Assessment of coal traffic prospects.]

CSX Corporation -- Control -- Chessie System Inc. and Seaboard Coast Line Industries, F.D. No. 28905 (Sub-No. 1), et al. [Competitive effects of merger on coal transportation.]

Union Pacific Corp., et al. -- Control -- Missouri Pacific Railroad Co., et al., F.D. No. 30000. [Effects of merger on intermodal and coal transportation.]

United States of America -- Petition for a Declaratory Order, Docket No. 39879. [Rate issues concerning commodities moving rail-Great Lakes vessel-rail.]
Increased Rates on Coal, Louisville and Nashville Railroad Co., Docket No. 37063 (and Sub-Nos.) and Ex Parte No. 357. [Comparative rate levels to utilities.]

Railroad Exemption -- Export Coal, Ex Parte No. 346 (Sub-No.7). [Constraints of international competition on rail rates for export coal.]

Westmoreland Coal Sales Co. v. Denver & Rio Grande Western, et al., Docket No. 38301-S (Sub-No. 1) [Present and future markets for the export of Western U. S. coal to Japan and other Pacific Rim countries; implications for U. S. rail rates and markets.]

Bituminous Coal -- Hiawatha, Utah to Moapa, Nevada, Docket No. 37038 and Aggregate Volume on Coal -- Acco, Utah to Moapa, Nevada, Docket No. 37409. [Analysis of demand elasticities and methodologies for computing reasonable rates.]

Dayton Power & Light Co. v. Louisville and Nashville Railroad Co., Docket No. 38025-S. [Analysis of rail market power and rate levels.]

Potomac Electric Power Co. v. Baltimore & Ohio Railroad Co., et al., Docket No. 37872-S and Docket No. 37886-S. [Analysis of rail market power.]

Consumers Power Co. v. Norfolk & Western Railway Co., et al., Docket Nos. 37854-S and consolidated cases. [Analysis of rail market power].

Consumers Power Co. v. Chesapeake & Ohio Railway Co. and Consolidated Rail Corp., Docket No. 38181-S. [Analysis of rail market power.]

Consumers Power Co. v. Missouri Pacific Railroad Co., et al., Docket No. 37853-S and consolidated cases. [Analysis of rail market power.]

Consumers Power Co. v. Norfolk and Western Railway Co., et al., Docket No. 37857-S and consolidated cases. [Analysis of rail market power.]

General Electric Company v. Baltimore and Ohio Railway Company, et al., Docket No. 38125-S. [Reasonableness of rates for transport of hazardous gases.]

Detroit Edison Co. v. Consolidated Rail Corporation et al., Docket No. 38279-S and consolidated cases. [Market power over transport of coal.]

United States District Courts

Valley Transit Company, Inc. v. Greyhound Lines, Inc., Civil Action No. B-92-153 [Competitive conditions in the intercity bus industry.]

ANE, Inc. v. Sun International Productions, Inc., Civil Action No. C-74-210 (D. Utah). [Assessment of business practices in the film industry.]

Wilson P. Abraham Construction Corp. v. Armco Steel Corp., et al Civil Action Nos. 74-1899 and 75-317 (E.D. La.) [Evaluation of markets for steel reinforcing bars.]

United States v. United States Steel Corporation, Civil Action No. 5-7-5-77 (D. Minn.). [Proper charges for movement of coal by rail and lake vessel.]

Gregg Communications System, et al., v. American Telephone and Telegraph Co., et al., Docket No. 82C6921 (N.D. Ill.). [Markets for telephone answering devices.]

MCI Communications Corp. et al. v. American Telephone and Telegraph Co. et al., Civil Action No. 79-1182 (D.D.C.). [Assessment of long distance telephone markets.]

Southern Pacific Co. and Southern Pacific Communications Co. v. American Telephone and Telegraph Co., et al., Civil Action No. C-83-0094SW (N.D. Cal.). [Evaluation of damage claims in long distance telephone markets.]

Federal Energy Regulation Commission

El Paso Alaska Co., et al., Docket No. CP75-96, et al. [Evaluation of net benefits of competing Canada/United States natural gas pipeline projects.]

Trans-Alaska Pipeline System, Docket No. OR78-1. [Assessment of rate standards.]

Williams Pipe Line Co. Proceeding, Docket No. OR 79-1, et al. [Assessment of rate standards.]

Interstate Transportation of Gas for Others, Docket No. RM85-1-000 [Development of corporate positions for a major natural gas user on pipeline competition and rate issues.]

VERIFIED STATEMENT

OF

RICHARD D. SPERO

My name is Richard D. Spero. I am the Principal of RDS Consulting Company located at 6805 Newbold Drive, Bethesda, Maryland 20817.

For more than two decades, my professional work has involved the economics of rail transportation. In 1972, I was the principal analyst in a study of the railroad industry commissioned by the Senate Commerce Committee. This study was published by the Committee under the title The American Railroads: Posture, Problems, and Prospects. Earlier, in 1970 and 1971, I was a consultant to the National Academy of Sciences in conjunction with a study of national transportation policy and planning which the Academy was conducting for a special Presidential Commission. In 1976, as part of a study conducted for the Department of Transportation in conjunction with Section 902 of the Railroad Revitalization and Regulatory Reform Act of 1976 (the 4-R Act), I examined trends in transportation as they related to rail and other modes of transportation.

Prior to establishing my firm in 1991, I was Vice President of Richard J. Barber Associates, Inc. where my work centered on a variety of transport issues including the competitive implications of mergers and consolidations, the movement of various commodities by rail and other modes, taxation, and other public policy matters. In these contexts, I have been closely involved in testimony prepared for the Commission, testifying myself on a number of occasions and also assisting others (a list of such filings is provided in the Appendix to this statement).

With RDS Consulting Company, I have been retained to assess a variety of rail transport matters both in the U.S. and abroad. Most recently, I have been serving as a consulting economist to the Transport Division of the China/Mongolia Department of The World Bank. In this capacity, I have worked with the staff of both the Bank and the Ministry of Railways of the Peoples

Republic of China on various subjects including the competitive role of the railways in an evolving economy.

I am a graduate of Kenyon College, have done graduate work at Columbia University, and am a member of the American Economic Association.

In this proceeding, I have been asked by the Applicants to examine the consequences of the proposed consolidation (including the agreement of September 25, 1995 between the Applicants and BN/Santa Fe) for the transportation of chemicals -- especially those products produced and shipped from the Gulf Coast.[1] In this statement, which sets forth the results of my analysis, I begin with an overview of the chemical industry and its transportation requirements. Next, I consider a number of the more significant efficiencies and cost savings promised by the pending merger. This is followed by an assessment of the many types of non-UP/SP transport alternatives that independently will continue to discipline competition for the transport of a broad range of chemical products. Taking all of this into account, I conclude that the consolidation of UP and SP will provide benefits of real consequence to chemical shippers and to the consuming public without any lessening of competition.

Overview of the Chemical Industry[2]

Inclusive of basic feedstock inputs and a host of intermediate and end products ranging from plastics to drugs to fertilizers, the U.S. chemical industry is sizable, with 1994 sales of $357 billion. In addition to domestic business within the U.S., the industry has a prominent position in international trade: taken together, the dollar value of U.S. chemical imports and exports in 1994 amounted to almost a fourth of total U.S. sales, or approximately $85 billion

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[1] Throughout this statement, the term "chemicals" embraces the commodities classified under Standard Transportation Commodity Code ("STCC") 28 and 29, and related hazardous materials classified under STCC 49. The definition of the Gulf Coast here -- Texas and Louisiana -- is identical to that set forth in the Verified Statement of witness Peterson.

[2] Unless otherwise indicated, the data in this portion of my statement are from Chemical Manufacturers Association, U.S. Chemical Industry Statistical Handbook 1995.

(Mexico received 8.4 percent of 1994 exports, while Canada was the country of origin for 20.1 percent of imports). The largest share of output (as measured by value of shipments) is accounted for by the chemical industry itself (24 percent), but other important purchasers in the manufacturing sector include rubber and plastics, textiles and apparel, petroleum, paper and allied products, and primary metals. Outside of manufacturing, a substantial portion of end-use is attributable to agriculture, construction, health care, and consumer products.

World War II stimulated the most recent growth period for the industry, much of which occurred in the basic chemicals and petrochemicals portion of the industry. Due to the ready availability of petroleum and natural gas feedstocks, a substantial proportion of this growth has been centered along the U.S. Gulf Coast. Indeed, about 70 percent of all primary petrochemicals are produced in Texas and Louisiana.

Given the size of the industry and the scope of products produced, it is understandable that its distribution requirements call for extensive use of all transport modes. Based on 1994 data, nearly half of the chemicals and allied products tonnage was carried by truck, with less than a fourth handled by water carriers and railroads respectively. From a cost standpoint, the industry estimates that about 42 percent of its transport outlays was for truck transport, just over 37 percent for rail, and the remaining 21 percent for water and other modes (e.g., pipelines).[3]

From the perspective of the railroads, the traffic provided by the chemical industry is important. To illustrate: for both UP and SP the revenues associated with the transport of chemicals (STCC 28) and petroleum products (STCC 29) in 1994 were equal to about a fifth of

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[3] Noting the growing importance of lean manufacturing and just-in-time inventory techniques, the industry's trade association affirms that for the transportation of chemicals, trucks have obtained market share from the railroads owing to their greater flexibility and quicker delivery times.

total freight revenues, while for BN/Sante Fe the comparable figure was over 11 percent.[4] Clearly, it is in the economic interest of the carriers, cognizant of the available transport alternatives, to continue according meaningful attention to the transportation of chemicals.

Competitive Benefits of the Consolidation for Chemicals Traffic

Several of the beneficial effects of the proposed merger are of special consequence to chemical shippers. First, by creating new single-line routes and shorter routes, a combined UP/SP will stimulate competition for the transport of chemicals and petroleum products -- especially between the Gulf Coast and the West and between California and the Pacific Northwest including Canada. Second, by establishing more efficient connections to rail carriers in the Northeast and Southeast, and providing better service to the West for Gulf Coast shipments, the combination will facilitate more expedited delivery in transport corridors of importance to the chemical industry. Third, by minimizing the need to switch and classify rolling stock, the consolidated railroad will reduce exposure to hazardous materials incidents -- a matter of great concern to carriers and shippers alike. Fourth, considering the shipper investment in privately-owned or leased rail equipment as well as the comparatively high value of products moving in this rolling stock, all of the aforementioned benefits will translate into real and important savings for chemical transport users.

New Single-Line Service. For shippers of chemicals traffic throughout North America, the ability to move traffic over the single-line routes created by the merger will produce substantial benefits. From an operating standpoint, traffic clearly will be handled in a more timely manner. As well, from a commercial perspective, the consolidation will enable producers to contest in distant markets with greater competitive effect.

To illustrate what is involved, consider the movement of styrene from Odessa Texas, an origin local to UP. In order to reach destinations such as Pittsburg, California, and

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[4] As reported by the carriers in their respective Freight Commodity Statistics filings with the Commission.

Torrance, California, this traffic typically is routed via Sweetwater or El Paso in interline service. With the consolidation, though, Odessa (and Freeport, Texas) styrene will be able to utilize the more expeditious single-system route to these and other California sales locations.[5] Likewise, from Plaquemine, Louisiana, producers of chlorine will have available a single-system route to California destinations following approval of the transaction.[6]

Receivers of chemicals who are local to UP similarly will benefit from new single system service. Thus, customers in Little Rock and other Arkansas locations who today obtain polyethylene from Lake Charles, Louisiana, in interline rail service will be in a position to utilize the single-line route made possible by the consolidation. From its vantage point at Midland Texas, Farstad Oil, a receiver of propane, butane, natural gasoline and propylene, supports the merger for the same reason, stating that the consolidation will provide "an untold number of opportunities to diversify our incoming and outgoing product base" and thus enable it "to realize a better competitive posture in markets such as California, Arizona, and New Mexico."[7]

What is true for shippers and receivers local to UP is also the case for similarly situated businesses that are local to SP. For example, following the merger, shippers at Mococo, Martinez and Richmond, California, will be able to transport sulfuric acid in single-line service to

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[5] Acknowledging the increase in single-line train operations that will result from the merger, Rexene Corporation, a plastics and petrochemical manufacturer located at Odessa, observes that this new level of service "will allow Rexene to be a more viable competitor going forward." Verified Statement of P. R. Malcom, Rexene Corporation at 2.

[6] A number of chemical shippers who originate traffic on UP support the proposed consolidation because of the single-line service it will provide to SP destinations. These shippers include Buckman Laboratories (Cadet, Missouri, to Southern and Central California), ICI Explosives (Atlas, Missouri, to Arizona and California), J. R. Simplot Company (Pocatello, Idaho, and Rock Springs, Wyoming, to California, Arizona, and Mexico) and Nalco Chemical Company (various).

[7] Verified Statement of R. J. Clark, Farstad Oil, Inc. at 1.

a variety of destinations in the Pacific Northwest including Seattle and Tacoma.[8] Likewise, the single-line routes created by the combination will mean that from SP origins there can be more expeditious transportation to Mexico of a variety of chemicals, including sodium sulfates, plastics, fertilizers and petroleum coke.[9]

Receivers local to SP also will benefit from the opportunities made feasible by single-system service. Thus, customers in Arizona and California will be able to obtain urea over a new single-line route from Oklahoma as well as via more efficient two-carrier service from origins in Alberta. In the same way, ethyl alcohol will be able to move from Midwest origins to various SP terminations in Louisiana and Arizona on a single-system basis.[10]

For UP shippers and receivers in Texas and California, respectively, the merger will offer meaningful and expeditious single-system service in lieu of what now is only a nominal single-line operation via the time-consuming and circuitous UP routing through Utah. For movements between Houston and Los Angeles, for example, as of July 1995 the average transit time over an exclusive UP routing was over 17 days. With merger, single-system moves between Houston and Los Angeles via El Paso on average will require about four days -- an average improvement of approximately two weeks. Clearly chemical traffic will be a major beneficiary.

Single-line service also has the potential to attract traffic which is not now moving by rail. Here, as well, chemical shippers are expected to benefit. Today, for example, ARCO

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[8] Similarly, Petro Source Refining Corporation, which ships asphalt from Martinez, California, to Elko, Nevada, believes that the delays it is currently experiencing with joint SP-UP interline service will be minimized by single-system operations. Verified Statement of Petro Source Refining Corporation.

[9] "The combined railroad will offer more expedited, pre-blocked and pre-cleared trains to and from interior points in Mexico utilizing 'Despacho Previo' for expediting border crossings such as Nogales, AZ." Verified Statement of Gary Long, J. R. Simplot Company Minerals and Chemicals Group at 2.

[10] See also the Verified Statement of Continental Acrylics, Inc. (receives methyl methacrylate monomer and ethyl acrylate monomer from Avondale and Taft, Louisiana, at its SP-served facility at Compton, California) and the Verified Statement of Jones Chemicals, Inc. (receives water and sewer purification chemicals at its SP-served location at Torrance, California).

transports methyl t-butyl ether (MTBE, a fuel enhancer that results in lower carbon monoxide emissions) from its UP-served facility at Channelview, Texas, to Los Angeles via tanker ships through the Panama Canal. With the new single-line route between Texas and California, UP/SP will be competitive for this traffic

Similarly, the Applicants anticipate that fertilizer now shipped from Alberta to Fresno, California, via water and truck can be attracted to the new single-line route that will be established in the I-5 Corridor.[11] Likewise, the merger will render UP/SP competitive for fertilizer presently transported by barge and truck from the Midwest to Stockton and the surrounding area. Here, again, for these chemical shippers who are not now utilizing the rail mode, single-system service will provide a more direct and expedited transport option.[12]

More Efficient Movements. With consolidation, UP/SP will be positioned to provide improved service for the transport of chemicals to and from virtually every region of the country, but the service enhancements made possible by the merger will be particularly evident with regard to flows involving the Gulf Coast areas of Texas and Louisiana. For these shippers, a combination of better transit times and more efficient yard and classification procedures will result in safer and more expedited shipments.

Consider, for example, the Gulf Coast chemicals traffic moving to Southeast destinations over the New Orleans gateway. While some of this traffic is currently pre-blocked prior to interchange with CSX and NS, the dispersion of UP and SP volumes, and SP's service

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[11] A shipper of liquid petroleum gases, noting that transporting product over the I-5 Corridor now involves a costly multi-line rail haul, observes that "a single line move will move this traffic more competitively, increasing the viability of business between Canada and Mexico." Verified Statement of Stephen J. Creamer, Centennial Gas Liquids L.L.C. at 1.

[12] Among the many other shippers whose statements spotlight single-system service as a chief benefit of the merger are Anderson Die & Manufacturing Company (plastic pellets), GMCO Corporation (magnesium chloride and calcium chloride), HCI Chemtech Distribution Inc. (various), and Tosco Refining and Marketing (liquefied petroleum gas).

problems, limit more extensive classification. Upon consolidation, though, traffic from former SP origins and former UP origins will be handled in integrated, more efficient train operations, with a substantial increase in pre-blocking. Thus, for traffic interlined with NS, new blocks will be made for Knoxville and for Chattanooga (while the Birmingham block which UP classifies today will be retained). For CSX interchanges, the only blocks of Southeast traffic which UP prepares now are for Jacksonville and Mobile. Post-merger, four additional blocks -- for Atlanta, Greenwood, Hamlet and Nashville -- will be made up prior to interchange at New Orleans.

Combined with improvements in road performance, these classification procedures are expected to result in significant reductions in trip time. Based on July 1995 data, manifest shipments from Houston via New Orleans took 3.6 days over UP and 4.5 days via SP. After consolidation, it is anticipated that the comparable figure will be about 2.7 days. This means that UP shippers can anticipate a savings in transit time of about one day, while for SP customers the gain will amount to two days.[13]

Similar benefits will be associated with Gulf Coast movements to the Northeast for interchange with Conrail. Inclusive of the classification work which A&S performs at St. Louis, the average recent transit time for Gulf Coast traffic originated by SP for Conrail averaged 4.9 days. Two factors will expedite this traffic post-merger. First, through route specialization, the UP line from the Gulf Coast to the Midwest will be devoted largely to northbound traffic, while the former SP line will predominantly carry southbound flows. This will free up capacity and allow for more efficient line-haul transit. In addition, instead of having A&S classify SP cars for Conrail in St. Louis, traffic will be pre-blocked along with that of UP and flow over the more efficient Salem, Illinois, direct interchange. Collectively, these efforts will result in an average transit time of 3.3 days. Compared to the average 4.9 days on SP, this means an improvement of nearly a third. For

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[13] The benefits of pre-blocking are acknowledged by several chemical shippers located throughout the country. See, e.g., the Verified Statements of Buckman Laboratories, Cyro Industries, Heritage Bag Company, and J. R. Simplot Company.

UP shippers who now experience an average transit time of 4.3 days, there will be a gain of almost a fourth.[14]

To the West Coast as well, chemical shippers -- especially those on SP -- will experience important savings in transit time. SP movements from Houston to Los Angeles via San Antonio and El Paso are consistently exceeding the scheduled transit times and in some cases have ranged up to 18 days. According to SP personnel, about a week of this excess traces to terminal delays in Houston and West Colton. With consolidation, and specialization of yards in both terminals, as well as new bypass blocking, it is expected that more yard capacity will be available. This, along with use of UP's sophisticated Transportation Control System to help in planning yard work, will cut delivery times back to the scheduled nine-day level. Under these conditions, the merger should result in time savings of from a third to a half for Gulf Coast movements to the West Coast.[15]

Reduced Exposure to Hazardous Materials Accidents. There is widespread understanding within the industry that most rail hazardous materials incidents occur in switching and classification yards. Two chief factors are responsible. First, in yards, rolling stock undergoes frequent handling with various switching operations taking place from and to storage tracks prior to ultimate positioning into train consists (and where yard capacities are limited, hazardous cargo may well undergo more switching than otherwise is the case). In addition, compared to movement on mainline tracks, all freight cars -- including those containing hazardous materials -- experience longer dwell times on yard holding tracks, which again exposes them to increased risk of incidents.

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[14] In addition to expediting traffic, the incremental capacity made possible by directional route specialization will result in a substantial savings in capital outlays, freeing up capital for other uses beneficial to shippers. Prior to consolidation, UP had budgeted $21 million for sidings, multiple tracking projects, and Centralized Traffic Control signalling on the Arkansas and Texas segments of its Gulf Coast-Midwest line.

[15] Many shippers endorse the consolidation because it will reduce the switching delays they have been experiencing on SP. See, e.g., the Verified Statements of Bonus Crop Fertilizer, Pacific Chemical Distribution, Pioneer Chlor Alkali and Rexene Corporation.

From the preceding discussion, it is apparent that single-system service and the additional pre-blocking of cars that will be forthcoming with the UP/SP consolidation will result in faster and more efficient freight handling. These same factors also will contribute to minimal car switching both in yards and at interchange locations. For chemical shippers -- much of whose traffic is categorized as hazardous -- this represents an additional benefit of merger, because less in the way of car handling means reduced exposure to dangerous and costly accidents.

For chemical shippers who use SP, this is of special significance. Thus, Jones Chemicals states that having "our chemicals delivered safely is our first and foremost concern" and indicates its belief that the "merger would bring the UP's strong history of capital improvements into the SP system, with the combined capital dollars being applied to the upgrading and improvement of the SP's rails, thus insuring a safer rail network."[16] For this and likeminded chemical shippers, of reduced exposure to hazardous materials incidents constitutes an important merger benefit.[17]

Summary. Taken together, all of the aforementioned benefits -- single-system service, more efficient movements between railroads, reduced exposure to hazardous materials incidents -- translate into meaningful bottom-line savings for chemical shippers. Some of these savings trace to the value of the cargoes being transported. Based on recent published prices and typical loading weights, the value of a carload of chemicals such as styrene or adipic acid is on the order of $80,000 or more.[18] Accordingly, producers and users place strong emphasis on reliable transportation as a way of controlling inventory and carrying costs. To this end, as shippers such as Rhone-Poulenc have indicated, the benefits described here are directly pertinent:

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[16] Verified Statement of Anne S. Wilcox, Jones Chemicals, Inc. at 2.

[17] See, e.g., the Verified Statements of Amvac Chemical Corporation, ISK Biosciences, NGL Supply Co., Ltd., and Rhone-Poulenc.

[18] Chemical Marketing Reporter (October 30, 1995).

> "[We need] a reliability of the transit experience that we can convey and guarantee to our customers for their production planning. Our customers are increasingly seeking dependable, just-in-time deliveries to preclude expending their dollars needlessly and controlling their assets."[19]

Echoing this, Hoechst Celanese notes: "The ability to track our shipments for inventory management purposes and to ensure on-time delivery has become increasingly important."[20]

In addition to inventory cost savings, many chemical shippers lease or own railroad freight cars. Therefore, any merger benefit that facilitates more productive use of rolling stock translates into significant equipment savings. To illustrate what is involved, consider the following. In planning rolling stock needs, chemical shippers must postulate a cycle time to move the traffic from origin to destination and back to an origin for reloading. Over the period of a year, a cycle time of 20 days over a given distance might require 110 freight cars to accommodate a particular volume of traffic. With tank cars priced at approximately $80,000, this would amount to an annual outlay of almost $9 million. If as a consequence of merger, cycle times can be shortened, these equipment expenditures will be reduced. Thus, should the cycle time in the example be cut in half -- from 20 days to 10 days -- equipment needs might shrink from 110 cars to 80 cars (taking account of the unchanged periods of time that cars spend at origin and destination). On this basis, the rolling stock investment would amount to only $6.4 million -- a decline of more than 25 percent.

From the shipper's perspective, these savings are of consequence. Hoechst Celanese recognizes this, stating that it expects the UP/SP consolidation will help in "reducing the need to acquire extra tank cars for the Bayport movements."[21] FMC Corporation anticipates similar savings:

> "FMC manages a fleet of more than 2400 cars, and therefore car utilization is very critical for us. Our current program to upgrade our

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[19] Verified Statement of Paul Rosenblatt, Rhone-Poulenc North American Chemicals at 2.

[20] Verified Statement of Richard C. Seawright, Hoechst Celanese Chemical Group, at 4.

[21] Id.

> fleet makes it even more important that we achieve the best possible utilization. Improvements in efficiency in movements on the Southern Corridor and on the Overland Route should decrease cycle times for our equipment. Increased efficiencies all across the UP/SP system resulting from the merger should also have the effect of improving cycle times for our cars. These improvements will help us keep our capital equipment costs down by minimizing loaded and empty rail transit times, which equates to having the need for fewer cars to move the same or higher volumes."[22]

Many other transporters, representing a wide array of commodities, reflect the same view, underscoring the broadbased understanding that for shippers of chemicals the benefits resulting from improved cycle times are substantial.[23]

Beyond these specific benefits, many shippers have voiced apprehension regarding SP's capital constraints and look to the consolidation to insure vigorous and long-term rail competition in the West. Expressing the concern of others, the City of San Jose Environmental Services Department testifies that "SP has simply been unable to commit the financial resources necessary to provide top level rail services in today's competitive environment," while American Polystyrene believes that on its own SP cannot compete "on an equal basis and would soon deteriorate."[24] Merger with UP is viewed as a necessary solution: "if this merger is approved, the UP will do an excellent job as they have on their railroad. Those of us in Arizona desperately need the finances and expertise of the Union Pacific in order to bring the Southern Pacific up to UP

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[22] Verified Statement of John L. Abbott on behalf of FMC Corporation [hereafter FMC] at 5.

[23] See, e.g., Abilene AG Service & Supply (liquid fertilizer), Alox Corporation (oil additives), Azrock Industries, Inc. (vinyl products), Exxon Chemical Canada (polyethylene and PVC resins), Old World Industries, Inc. (glycols, chlorethylenes), Petrogas (propane and butane), Pioneer Chlor Alkali Company, Inc. (caustic soda, chlorine, and muriatic acid), Shrieve Chemical Company, Inc. (sulfuric acid), 76 Products Company (petroleum products) and Rexene Corporation (plastic resins, petrochemicals, and plastic film).

[24] Verified Statement of Carol Lazetera, City of San Jose Environmental Services Department at 1, and Verified Statement of Carolyn Tan, American Polystyrene Corporation at 1. See also, e.g., the Verified Statements of Azrock Industries, Inc., Great Western Chemical Co., HCI Chemtech Distribution, Inc., Nalco Chemical Company, ITEX, a Division of IRM, L.P., NesteResins Corporation, Rexene Corporation and Waste Management, Inc.

standards."[25] Exxon Chemicals America does not believe that "SP would survive as an independent railroad if this merger were not to occur."[26] Consolidation with UP will, as these shippers affirm, result in the strongest possible competitive outcome: "two strong carriers will provide more viable competitive choices than one mega carrier, one medium sized carrier and one weak carrier."[27]

Finally, in evaluating the benefits of merger, it is well to recall the pervasive role of chemicals in a seemingly endless list of consumer products. From furnishings to automobiles, from computers to soaps and detergents, chemicals are omnipresent in the economy. Thus, as chemical producers and distributors pass along the savings which they gain from the efficiencies brought about by this transaction, the ultimate consumer also will be rewarded with lower product price tags. The benefits of the UP/SP consolidation thus clearly will advance the public interest.

Competition for Chemicals Traffic

As noted at the outset, chemical manufacturing is a worldwide enterprise. The leading U.S. firms, in fact, are large multinational operations serving a marketplace that is truly global in scope. Within the U.S. -- and Canada as well -- the industry is similarly broad-based, with production sites throughout the continent. In this environment, chemical shippers have developed a variety of distribution channels that make use of multiple carriers in each of the transport modes. Under these conditions -- characterized by ample source and carrier alternatives -- no particular transporter possesses sufficient economic leverage to harm competition. As the following

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[25] Verified Statement of Leland S. Brake, Navajo Western Asphalt Company at 2-3.

[26] Verified Statement of B. Kenneth Townsend, Jr., Exxon Chemicals Americas at 2.

[27] Verified Statement of Salama Elsayed, AEP Industries, Inc. at 2. See also Verified Statement of Occidental Chemical Corporation.

discussion of these transport options demonstrates, this situation will not be adversely affected by the pending consolidation.[28]

Source Competition. For a number of chemical products handled by the UP and SP, the existence of abundant supplies from alternative sources precludes any lessening of competition as a result of the merger. Consider, for example, phenol or carbolic acid (STCC 2815111). In addition to Gulf Coast locations served by UP and SP, phenol also is manufactured in Pennsylvania, Ohio, Indiana, Illinois, Kansas and North Dakota at locations not served by either UP or SP. Consequently, more than half of the traffic is handled by transporters other than UP and SP.

Similarly, for urea (STCC 2818170) -- largely used as a nitrogen fertilizer -- there is substantial production outside of the areas where UP and SP are located. In addition to production sites in Tennessee, Ohio and Georgia, a large proportion of the overall supply of urea emanates from sources in Canada (37 percent of the originated rail tonnage of this commodity was shipped from Canadian origins in 1994). Here, as well, UP and SP together account for overall urea shipments.

Widespread manufacture outside of the UP/SP service area also characterizes the output of sulfuric acid (STCC 2819315). In addition to Canadian sources, sulfuric acid is produced in substantial quantities in the Northeast and Southeast. This largely explains why in combination UP and SP originate less than two-fifths of total sulfuric acid traffic. For the related product, spent sulfuric acid (STCC 2819330), the UP/SP share is less than half.

Non-Rail Competition. For a variety of chemicals, non-rail modes are very substantial alternatives (as noted earlier, industry sources indicate that the railroads account for less than a fourth of total chemicals tonnage). This is especially the case with regard to chemicals

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[28] In this section of my statement, I have relied on data drawn from the testimony of witness Peterson, and the Commission's Carload Waybill Sample for 1994, SRI International, Chemical Products Synopsis, a reporting service of Mannsville Chemical Products Corp., as well as information separately supplied by marketing personnel at UP and SP, respectively.

produced and shipped from the Gulf Coast, where transport via barge frequently constitutes a potent alternative to rail. Consequently, for many commodities, exclusive focus on rail statistics (and the UP/SP share thereof) is misleading because this fails to acknowledge the competitive impact of the barge option. For these chemicals, even for those origin-destination pairs which cannot employ barge (or a combination of barge and truck), it will be in the best economic interests of a merged UP/SP to keep such shippers competitive with those who can and do use barge.

The situation with respect to propylene oxide (STCC 2818265) is illustrative. To look only at Gulf Coast rail data would imply erroneously that UP and SP together originate

. Thus, a consolidated UP/SP will need to price and tailor its service offerings recognizing the reality of this barge alternative.

Styrene (STCC 2818342) provides another example of barge competition. From Louisiana

. The interplay between the modes is further demonstrated by vinyl acetate (STCC 2818668). Prior to being handled by UP, this product was moved via water by for onward movement by truck. In attracting this traffic back to rail, UP marketing personnel clearly had to confront the extant non-rail competition.

For glycols (STCC 28185) as well, barge is a meaningful competitive alternative. Here SP has had to confront the threat of water movements by

. In recent

years, SP has had to make major downward adjustments in its rate offerings to these shippers in order to combat what it regarded as a serious effort at diversion.

Other Rail Competition. Railroads other than UP and SP represent yet another type of transport alternative for chemical shippers. In the case of ethylene oxide (STCC 2818239), 40 percent of the Gulf Coast rail tonnage in 1994 was originated by IC and KCS. Combined with the volumes originated by non-UP/SP railroads at non-Gulf locations (in the Midwest, Northeast and Canada), nearly half of the ethylene oxide traffic moved by railroads other than UP and SP. Clearly, strong rail competition will remain after the UP/SP consolidation takes effect.

Similar competitive options are present for shippers of vinyl chloride (STCC 2813966). At Geismar, Louisiana, for example, the Borden facility is served by IC, while at Baton Rouge, Louisiana, the Formosa Plastics plant is accessed by KCS as well as IC and UP. At these and other Gulf Coast origins, non-UP/SP roads have access to more than half of rail originations of vinyl chloride in 1994. Inclusive of production locations outside the Gulf that also are not served by UP and SP (e.g., Westlake Monomers at Calvert City, Kentucky), over half of the vinyl chloride moving by rail in 1994 was originated by carriers independent of UP and SP. These alternatives, too, will continue to present effective competition to a merged UP/SP.

For other chemicals as well, rail options apart from UP and SP are evident and active. Thus, for chlorine (STCC 2812815), IC accesses the Formosa plant at Baton Rouge (as does KCS), the Occidental facility at Convent, Louisiana, the Pioneer Chlor Alkali location at St. Gabriel, Louisiana, and the Vulcan Materials origin at Geismar, Louisiana. In addition, KCS reaches LaRoche Industries at Gramercy, Louisiana, and PPG Industries at Lake Charles, Louisiana, while the Occidental plants at Deer Park and La Porte, Texas, are open to PTRA and thus to all line-haul carriers, including BN/Santa Fe. Reflecting this, fully half of the 1994 chlorine rail traffic from the Gulf Coast originated at locations not served by UP or SP, or open to carriers other than UP and SP.

Likewise, in the case of acrylates (STCC 2818115), significant non-UP/SP rail competition is present, with the Pampa production site of Hoechst Celanese served by BN/Santa Fe and the Deer Park facility of Rohm and Haas accessed by PTRA. Together, these two facilities account for nearly half of the acrylates capacity in the Gulf Coast, meaning that strong rail source competition clearly will remain following approval of the proposed consolidation.[29]

The Agreement with BN/Santa Fe. In conjunction with the merger, the Applicants have agreed to open a number of locations served only by UP and SP ("2-to-1" points) to BN/Santa Fe. For a variety of chemical commodities, this agreement will assure shippers of substantial post-merger rail competition. Based on 1994 traffic volumes, a sampling of the agreement 's impact for chemical traffic is set forth here:

* For hexamethylendiamine (HMD, STCC 2818169), DuPont's plant at Orange, Texas, will be open to BN/Santa Fe. Together with independent rail access elsewhere along the Gulf Coast, the HMD rail tonnage originated on the Gulf Coast will be available to railroads other than UP and SP, and nationwide will be open to railroads other than UP and SP.

* For adipic acid (STCC 2818662), the opening of DuPont's Orange, Texas, facility will mean that Gulf Coast rail traffic will be open to other railroads, while nationally (inclusive of Canadian rail imports), the adipic acid rail volume will be handled by carriers independent of UP and SP.

* For polypropylene glycol (STCC 2818555), BN/Santa Fe will gain access to the Miles/Bayer location at Baytown, Texas. Consequently, Gulf Coast rail tonnage will be open to non-UP/SP railroads, and for the U.S. as a whole the

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[29] The addition of new production capacity at plant sites open to various line-haul carriers will promote transport competition for other chemical commodities. For example, at the PTRA Deer Park location, Rohm & Haas plans to increase existing capacity to produce acrylic acid (STCC 2818692) by a third. Inclusive of a smaller planned capacity increase at Union Carbide's Taft, Louisiana, facility (UP), of acrylic acid capacity would be open to non-UP/SP railroads. Similarly, capacity additions are scheduled for acetic acid (STCC 2818610) plants at Deer Park, Texas (PTRA), at Sterling, Texas (TCT), as well as at Clear Lake, Texas (SP). Taken as a whole, this means that acetic acid capacity will be open to railroads other than UP/SP.

rail volume of this commodity will be available to railroads other than UP/SP.

* For polypropylene (STCC 2821139), the opening of Exxon Chemical Company's Baytown facility to BN/Santa Fe will mean that over half of Gulf Coast rail tonnage will be available to non-UP/SP roads; nationally, at least three-fifths of polypropylene origins will be open to carriers other than UP/SP.

* For polyethylene (STCC 2821142), several plant sites in the Gulf Coast will be opened to BN/Santa Fe. These include those of Chevron Chemical Company and DuPont (at Orange, Texas), Exxon Chemical (Mt. Belvieu, Texas) and Mobil Chemical (Beaumont/Amelia, Texas). Under these conditions, half of Gulf Coast rail traffic of polyethylene will be accessible to railroads other than UP and SP (the comparable national figure is about 54 percent).

The Agreement also provides that BN/Santa Fe will purchase SP's line between Iowa Junction and Avondale, Louisiana, while permitting UP/SP to retain full trackage rights over this route. Consequently, shippers of carbon blacks (STCC 2899610) located on this line -- including Cabot Corporation and Columbian Chemicals Company at Franklin, Louisiana, and Degussa Corporation at New Iberia/Baldwin, Louisiana, will go from one-railroad to two-railroad access. As a result, over half of carbon blacks rail traffic will be open to non-UP/SP roads on the Gulf Coast, while nationwide two-thirds of the carbon blacks volume will be available to non-UP/SP roads.

Understandably, shippers are enthusiastic about the agreement. Southern Polymer, for example, anticipates that the access provided to BN/Santa Fe will bring "untold new opportunities to explore new markets, new customer relationships, and more efficient transport options,"[30] while Sulphuric Acid Trading Company indicates that the agreement will "keep competition in the west alive and well."[31] For chemical products shippers in particular, the agreement with BN/Santa Fe is distinctly pro-competitive.

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[30] Verified Statement of Paul Cochran, Southern Polymer, Inc. at 3.

[31] Verified Statement of James Wilson, Sulphuric Acid Trading Company at 2.

Summary. Although each of the generic competitive options has been treated separately in the prior analysis, it is important to note that with increasing inventiveness chemical shippers are combining these types of alternatives in order to assure themselves of market-based rates and service. Thus, was able to obtain rate concessions from UP by proposing a roll-on/roll-off barge operation that would have diverted rail cars from the UP to the BN/Santa Fe has threatened to undertake a similar operation to move polyvinyl chloride, as has for the transport of carbon blacks. Concerned about SP service, has moved its terminal from to (local to BN/Santa Fe), thereby depriving SP of about per year of asphalt business, and is contemplating construction of a truck transfer facility on BN/Santa Fe which would effectively divert over of asphalt traffic from SP.

From this, it should be clear that the products of the chemical industry are (or can be) manufactured and shipped from a variety of production facilities served by numerous carriers, rail and non-rail. The multiplicity of these manufacturing and distribution networks are of crucial significance because they provide chemical producers and receivers with the vital ingredient which guarantees the maintenance of transport competition: meaningful options for the movement of their traffic.

Since these options will continue in full force following the consolidation, the chemical transport marketplace will remain disciplined post-merger. Therefore, attempted anticompetitive behavior on the part of UP/SP can be seen not to be in its economic self-interest. If, hypothetically, UP/SP should seek to impose a noncompetitive rate increase, the effort would fail because too many source, modal and carrier options -- alone or in combination -- are available to effect a diversion of traffic to a non-UP/SP alternative. The marketplace thus would punish UP/SP for the attempt at an excessive rate increase by depriving the railroad of its contemplated gains. In short, the effort would be self-defeating.

Adding even greater weight to the viability of these options is the reality that shippers need not divert all of their traffic in order effectively to discipline UP/SP. On the contrary, as shippers repeatedly have demonstrated, their objectives can be achieved by shifting -- or threatening to shift -- just an increment of traffic. Take soda ash (STCC 2812322) as an example. Here, UP and SP access the domestic sources, but there is an independent transport alternative involving truck moves to BN/Santa Fe. As witness Peterson shows, this reload option accounts for only overall traffic, yet this share (which easily could grow given the unused transload capacity that is available) has been large enough to trigger dramatic downward rate adjustments by UP. In full force and effect post-merger, this disciplining option will just as effectively constrain a consolidated UP/SP.[32]

While the details may vary somewhat, what is true for soda ash also is the case for other chemical products. Consequently, a merged UP/SP will not gain the type of market power that will permit it to impose price increases profitably or to degrade service compared to premerger levels. Hence, the consolidation will not lessen competition for the transportation of chemicals.

Conclusion

Acknowledging the positive consequences for chemical shippers associated with single-system service, more efficient interline connections, better car utilization, and reduced exposure to hazardous materials incidents, it is apparent that these benefits can only be obtained by UP and SP through consolidation. Moreover, the capital infusion required by SP to ensure that chemical shippers and receivers on its routes are fully able to compete for existing business as well as tap into new marketing opportunities only makes economic sense in the context of merger. Furthermore, given the abundance of source, modal and other rail options (inclusive of the BN/Santa Fe agreement) for chemicals that can be transported by UP/SP, the benefits discussed

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[32] Confirming the effectiveness of transload operations, FMC notes that they "will serve as competitive checks on UP/SP rates and services" for soda ash. FMC at 7. See also, e.g., Verified Statement of Owens-Illinois, Inc. at 4.

here will be forthcoming without any harm to competition. For all of these reasons, it is my conclusion that the proposed UP/SP consolidation is overwhelmingly in the public interest and should be approved.

VERIFICATION

County of Arlington, Virginia)) ss:

Richard G. Sharp, being duly sworn, deposes and says that he has read the foregoing statement, knows the contents thereof, and that the same are true as stated.

Richard G. Sharp

Subscribed and sworn before me this 20th day of November, 1995.

Notary Public, Arlington, Virginia

Embossed Hereon Is My
Commonwealth of Virginia Notary Public Seal
My Commission Expires June 30, 1997
MARGARET ANN HILE

My Commission expires June 30, 1997

My Commission Expires June 30, 1997

APPENDIX

Mr. Spero has provided economic consultation in matters before --

Verified Statements designated by asterisk.

Interstate Commerce Commission:

* Western Coal Investigation -- Guidelines for Railroad Rate Structure, Ex Parte No. 347.

* Southwest Electric Power Co. v. Burlington Northern, Inc., et al, Docket No. 36980, and Annual Volume Rates on Coal, Wyoming to Flint Creek, Arkansas, Docket No. 36970.

* Iowa Power & Light Co. v. Burlington Northern Inc., Docket No. 36944, and Incentive Rates on Coal -- Belle Ayr, WY to Council Bluffs, Iowa, Docket No. 36792.

* Incentive Rate on Coal -- Hayden, Colorado to Kings Mill, Texas, Docket No. 36936, and Celanese Chemical Company v. Denver and Rio Grande Western Railroad Company and Atchison, Topeka and Santa Fe Railway Company, Docket No. 36875.

* Iowa Public Service Company v. Burlington Northern, Inc. and Chicago & North Western Transportation Co., Docket No. 37029, and Annual Volume Rates on Coal -- Rawhide Junction, Wyoming to Sergeant Bluff, Iowa, Docket No. 37021.

* Arkansas Power & Light Co. v. Burlington Northern, Inc. et al., Docket No. 36719.

* Incentive Rate on Coal -- Axial, Colorado to Coleto Creek, Texas, Docket No. 37226.

* CSX Corporation -- Control -- Chessie System Inc. and Seaboard Coast Line Industries, Inc., F.D. No. 28905.

* Union Pacific Corp. et al. -- Control -- Missouri Pacific Railroad Co. et al., F.D. No. 30000.

* Railroad Exemption -- Export Coal, Ex Parte No. 346 (Sub-No. 7).

* Coal Rate Guidelines, Nationwide, Ex Parte No. 347 (Sub-No. 1).

* Farmland Industries, Inc. v. Seaboard Coast Line Railroad Company, Docket No. 38058S, and W.R. Grace & Company v. Seaboard Coast Line Railroad Company, Docket No. 38059S.

* Mobil Chemical Co. v. Seaboard Coast Line Railroad, Docket No. 37850S.

* Chicago, Milwaukee, St. Paul & Pacific Railroad Co. -- Reorganization, F.D. No. 28640.

* CSX Corporation -- Control -- American Commercial Lines, Inc., F.D. No. 30300.

* Santa Fe Southern Pacific Corp. -- Control -- Southern Pacific Transportation Co., F.D. 30400.

* Box Car Hire and Car Service, Ex Parte No. 346 (Sub-No. 19).

* Kansas City Power & Light Co., et al. v. Burlington Northern Railroad Co., Docket No. 40046.

* Union Pacific Corp., et al. -- Control -- Missouri-Kansas-Texas Railroad Co., F.D. No. 30800.

* Dayton Power & Light Co. v. Louisville and Nashville Railroad Co., Docket No. 38025S.

* Shippers Committee, OT-5 v. The Ann Arbor Railroad Company, et al., Docket No. 39169.

* Blackstone Capital Partners L.P. -- Control Exemption -- CNW Corporation and Chicago and Northwestern Transportation Company, F.D. No. 31493.

* Rio Grande Industries, Inc., et al. -- Purchase and Related Trackage Rights -- Soo Line Railroad Company Line Between Kansas City, Missouri and Chicago, Illinois, F.D. No. 31505.

* Illinois Central Corporation, et al. -- Control -- MidSouth Corporation et al., F.D. No. 31801.

CSX Corporation, et al. -- Control -- Transkentucky Transportation Railroad, Inc., F.D. No. 31991.

Wisconsin Central Transportation Corporation, et al. -- Continuance in Control -- Fox Valley & Western, Ltd., F.D. No. 32036.

Union Pacific Corporation, et al. -- Control -- Chicago and North Western Transportation Company, et al., F. D. No. 32133.

United States District Courts:

In Re Chicago, Rock Island & Pacific Railroad Co., Reorganization No. 75B 2697 (N.D. Ill.).

Youngstown Steel Door Co. v. Thrall Car Manufacturing Co., Civil Action No. C76-567 (N.D. Ohio).

Burlington Northern Inc. v. United States, Docket No. 3-80-650 (D. Minn.).

In the Matter of Chicago, Milwaukee, St. Paul & Pacific Railroad Co., Debtor, No. 77B 8999 (N.D. Ill.).

Burlington Northern Railroad Co., et al. v. Interstate Commerce Commission and United States of America, Civil Action No. 4-86-336 E (N.D. Tex.).

United States Tax Court:

Chesapeake & Ohio Railway Co.,. Docket Nos. 5904-70 and 5646-71.

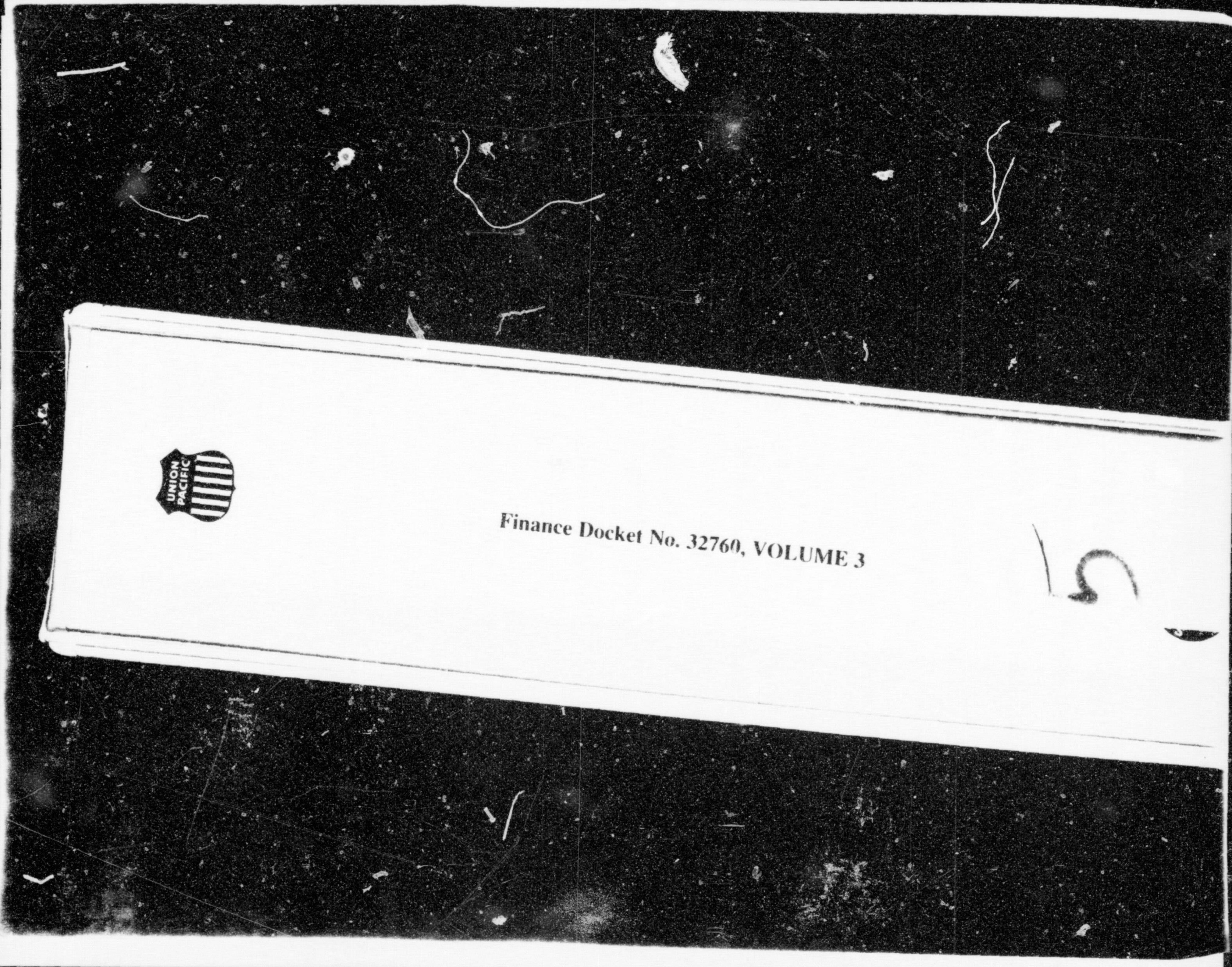
United States Court of Claims:

Baltimore & Ohio Railroad Co. v. United States, Docket No. 412-73.

Burlington Northern, Inc. v. United States, Docket No. 152-75.

Florida Public Service Commission:

* AMAX Chemical Corporation and Florida Phosphate Council, Inc. v. Seaboard System Railroad, Inc., Case No. 840095-RR.


UNION PACIFIC
Finance Docket No. 32760, VOLUME 3
5

UP/SP-24

Before the

INTERSTATE COMMERCE COMMISSION

Finance Docket No. 32760

UNION PACIFIC CORPORATION, UNION PACIFIC RAILROAD COMPANY
AND MISSOURI PACIFIC RAILROAD COMPANY
— CONTROL AND MERGER —
SOUTHERN PACIFIC RAIL CORPORATION,
SOUTHERN PACIFIC TRANSPORTATION COMPANY, ST. LOUIS
SOUTHWESTERN RAILWAY COMPANY, SPCSL CORP. AND THE
DENVER AND RIO GRANDE WESTERN RAILROAD COMPANY

RAILROAD MERGER APPLICATION

VOLUME 3

OPERATING PLAN (EXHIBIT 13), LABOR IMPACT EXHIBIT,
DENSITY CHARTS (EXHIBIT 14), AND SUPPORTING STATEMENTS

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November 30, 1995

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OF
R. BRADLEY KING AND MICHAEL D. ONGERTH

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VERIFIED STATEMENT

OF

R. BRADLEY KING AND MICHAEL D. ONGERTH

Our names are R. Bradley King and Michael D. Ongerth. We are, respectively, UP's Vice President-Transportation and SP's Vice President-Strategic Development. For the last four months, we have been responsible for developing the UP/SP Operating Plan (Exhibit 13 to the Application), which describes in detail how the merged UP/SP system will provide improved, more efficient transportation service to shippers. This statement highlights the principal service benefits of a UP/SP merger and describes some of the operating efficiencies it will produce.

Qualifications

King: My railroading career began in 1970 when I joined MPRR's management training program. After completing the program in 1971, I was appointed Assistant Trainmaster at Coffeyville, Kansas, and then Trainmaster at Pine Bluff, Arkansas. Later assignments in the MPRR Operating Department took me to St. Louis; to Kansas City; back to Coffeyville; to Longview, Texas; and finally to Little Rock, Arkansas. After the UP/MP/WF merger, I moved to Omaha to become Assistant General Superintendent of Transportation and then General Manager of Transportation. In 1986, I became Assistant General Manager in Kansas City. Then I returned to Omaha in 1987 as General Director of Transportation.

In 1988, I assumed responsibility for the project to create UP's Harriman Dispatching Center. I spent the next five years overseeing implementation of centralized dispatching on UP. That assignment ended on July 16, 1993, when I was promoted to Vice President-Risk Management. I assumed my current position earlier this month as a result of a reorganization in UP's Operating Department.

Ongerth: I have been employed by SP since 1968, holding various positions in management of division operations in Oregon, California, Texas and Arkansas, including serving as General Manager of Northwestern Pacific Railway Company, formerly a 300-mile SP rail subsidiary in California. I have also served in various General Office positions involving the management of systemwide operations, including network or system operations planning, supervision of system Amtrak operations, and supervision of system intermodal operations.

In August 1992, I was appointed to my present position. As a member of senior management with responsibility for long-range planning and system development, I have a continuing overview of SP's operations and services, its position in the railroad industry, the competitive environment in which it operates, and the company's strengths and weaknesses.

I. The UP/SP Merger from an Operating Perspective

Historically and physically, major UP and SP routes were created to work together. The first transcontinental rail line was forged by predecessors of UP and SP, the original Union Pacific Railroad Company (which went bankrupt in 1893) and Central Pacific. This line was completed with the celebrated driving of a golden spike at

Promontory, Utah, on May 10, 1869. Through freight service between Sacramento and Omaha began five days later. For decades, UP and SPT jointly operated this premier Central Corridor route, known as the "Overland Route," via a connection at Ogden, a few dozen miles southeast of Promontory.

Most people are less aware that SPT and a UP predecessor, the Texas & Pacific Railway Co. ("T&P"), were partners in creating the original Southern Corridor transcontinental route. That first route, still the most direct route between California and many South Central cities, linked SPT's Los Angeles-El Paso line with T&P's line from El Paso to Ft. Worth, Dallas, Shreveport and New Orleans.

This history helps explain why SP and UP routes fit together so well today and why the route structure of each railroad addresses many of the other's weaknesses, as illustrated in the sketches on pages 10 and 11. As respected railroader and writer John W. Barriger III wrote many years ago, UP and SP comprise "the most natural merger in American railroading." SP's route structure requires something else UP brings: increased access to capital to live up to its potential. Here are some of the key ways in which UP and SP routes complement each other:

- SP's "Sunset Route" between El Paso and Southern California fits perfectly into the UP system by bridging the gap between Southern California and UP's extensive route network in Texas and other South Central states. UP's route between Texas and California passes through Kansas City, Wyoming and Utah, taking Texas-Los Angeles shipments many hundreds of miles out of the way. While UP operates the most direct rail route from Memphis, Dallas and Ft. Worth to El

Paso, it is relatively lightly used because it connects with SP at El Paso, which has its own single-line, though longer, route east of El Paso. UP/SP will combine the former T&P route with SP from El Paso west, recreating the premier rail route of a century ago between Southern California and Ft. Worth, Dallas and Memphis.

- On the West Coast, SP's lines between Los Angeles and Portland, which SP calls the I-5 Corridor, link the West Coast extremities of the UP system at Los Angeles, the San Francisco Bay Area, and Portland. This linkage is very important, because equipment flows differ among UP's three lines from Wyoming to the West Coast, creating severe equipment imbalances. SP's routes permit triangulation and reuse of equipment, yielding greater productivity.

- SP's I-5 Corridor ends at Portland -- short of the all-important Olympia/Seattle/Tacoma region. By combining the SP I-5 Corridor with UP's line between Portland and Seattle, UP/SP will offer, for the first time in history, a direct single-line rail service between California and Seattle. In addition, UP/SP will provide single-line service over this route between California and Eastern Oregon, Idaho, Washington and the Canadian gateway at Eastport, Idaho. A UP/SP merger will also bring the financial resources needed to remove clearance restrictions in Oregon's Cascade Mountains, which prevent SP from using high-cube doublestack equipment in this important corridor.

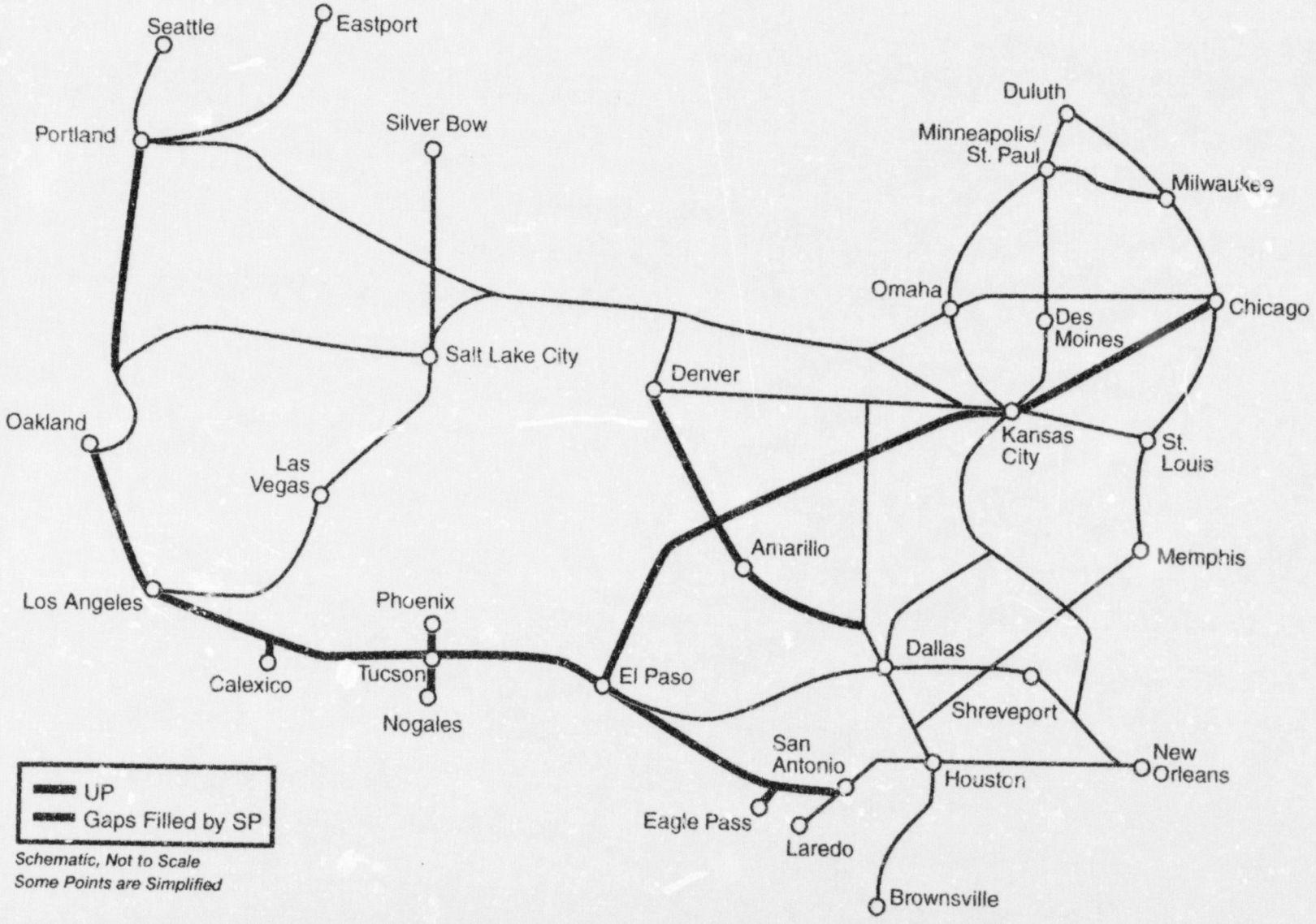
- For years, Santa Fe has dominated competition for Chicago-Northern California rail traffic. UP's line between Chicago and Ogden is excellent, but it then dips south to Salt Lake City over a severely congested line and, further west,

follows a circuitous path into and through Northern California. SP enjoys the better route between Oakland and Ogden, but east of Ogden it must negotiate the same congested UP segment between Ogden and Salt Lake City, climb over a steep grade in Utah, surmount the highest, steepest rail crossing of the Rocky Mountains, and traverse a circuitous route over UP trackage in Kansas. Combining UP east of Ogden with SP west of Ogden will recreate the Overland Route, giving UP/SP the ability to compete aggressively with BN/Santa Fe for even the fastest traffic between Chicago and Northern California and greatly reducing transit times for the many SP-served shippers in much of California.

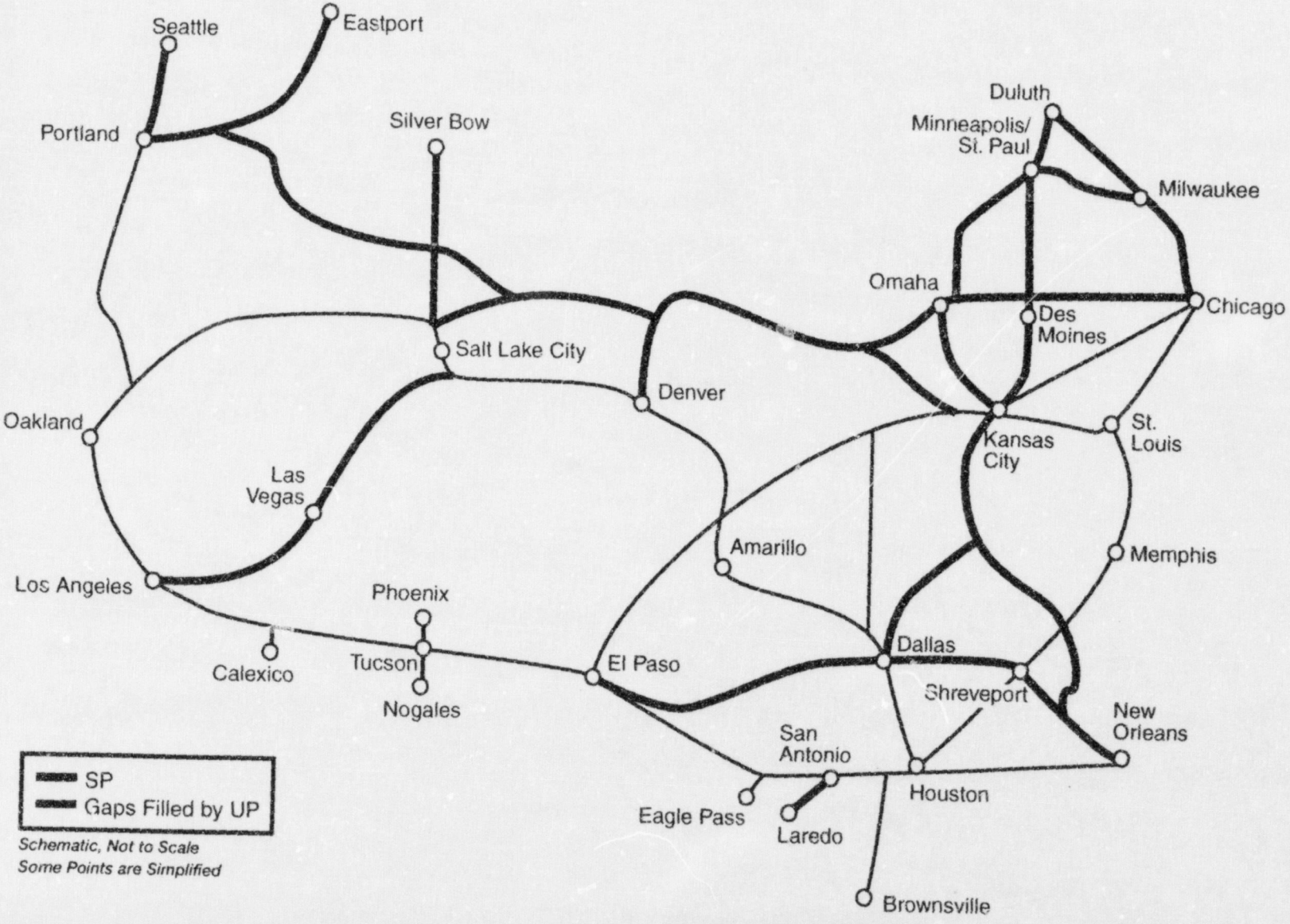
- Despite a massive and ongoing commitment of capital, UP's route between Chicago and Southern California is often congested. SP's Chicago-Los Angeles "Golden State" route, which relies on the former Rock Island "Tucumcari Line" west of Kansas City, is shorter but suffers from capacity limitations between Kansas City and El Paso and congestion west of El Paso. UP/SP will invest over $365 million to upgrade the Tucumcari Line and add capacity west of El Paso. The merged system will then coordinate operations over its two Midwest-Southern California routes to ensure reliability and compete with the reliable service offered by BN/Santa Fe.

Although the complementary nature of the UP and SP networks (depicted on the following schematic maps) provides incentives for the two railroads to work together by voluntary agreement, the economic motivation for two independent railroads to use their assets jointly is often limited. This is true for such reasons as the two companies' differing

SP Fills Gaps in the UP System



UP Fills Gaps in the SP System

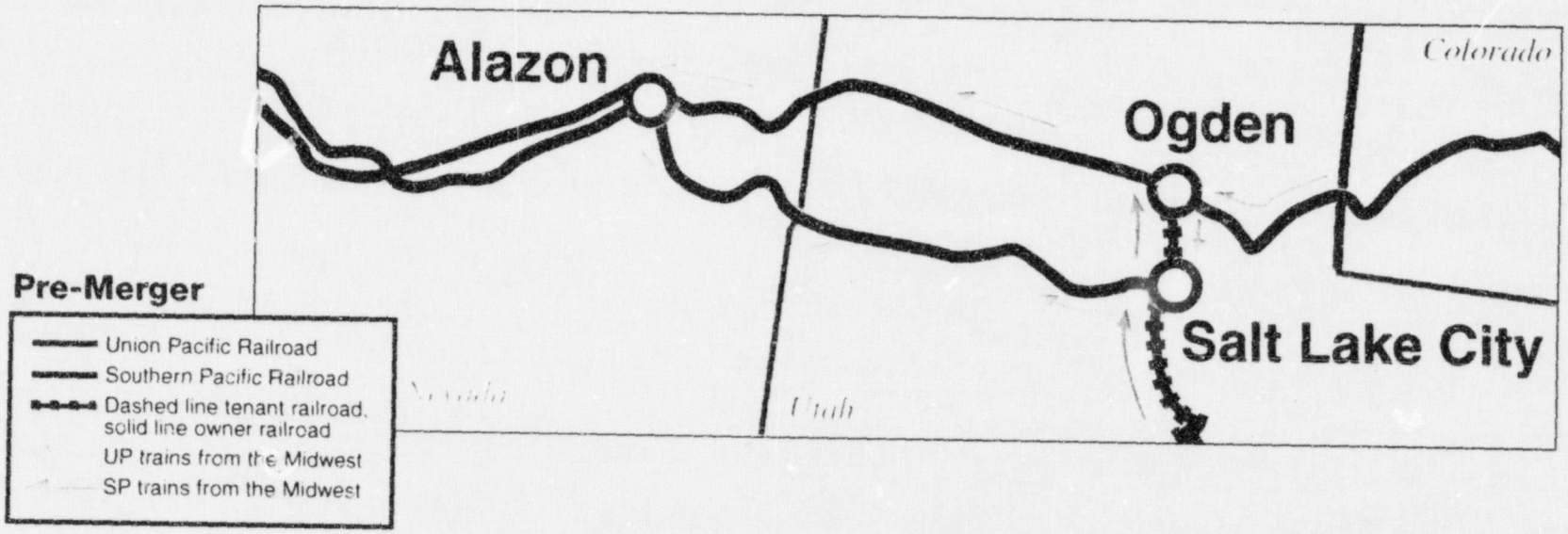


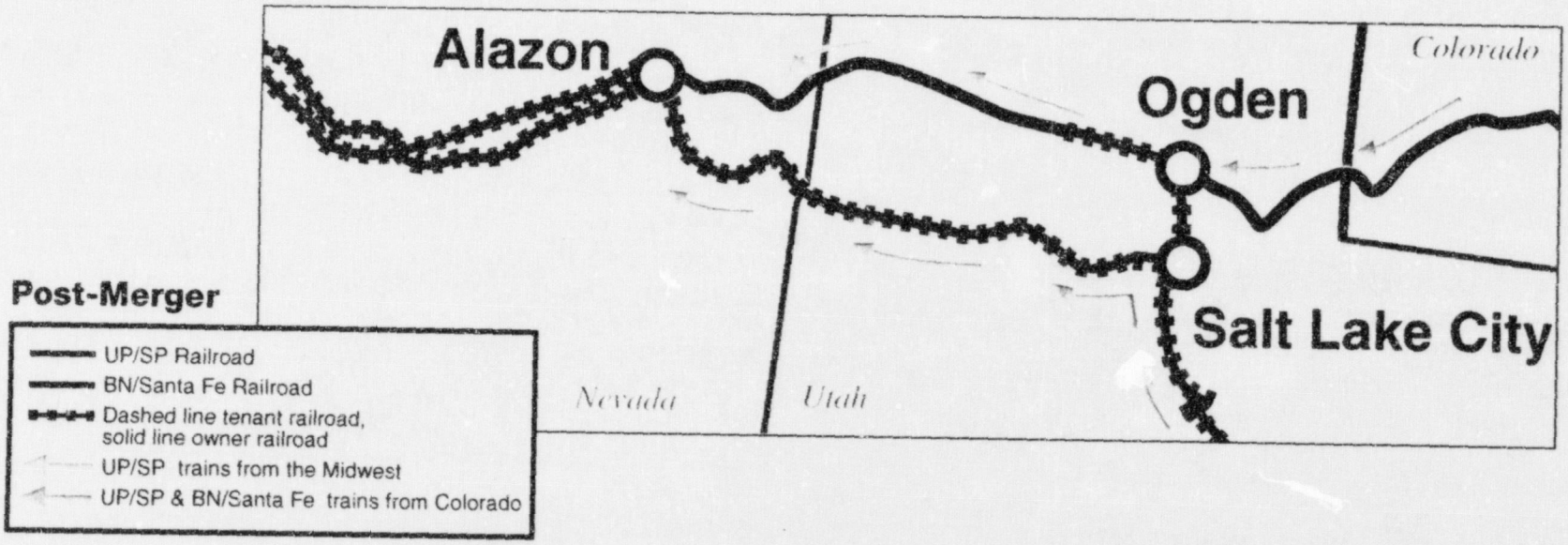
capital investment and management priorities, the "watershed" problem in which railroads receive a low return on management and capital investment in short hauls, and a natural desire to avoid the complications of interline coordination by focusing on their own single-line, albeit circuitous, routes. SSW's acquisition of the Tucumcari Line in 1980, UP's acquisition of WP and MPRR in 1982, and acquisition of SPT by the parent of DRGW in 1988 further weakened the incentives of these two railroads to pursue joint actions. After those acquisitions, UP and SP had incentives to channel formerly joint SP-UP traffic flows over their new system routes. This was especially true in the Central Corridor, where each system established its own single-line route, even though both new routes were more circuitous than the joint-line Overland Route over the Ogden interchange. UP and SP were now direct competitors, and that rivalry made it very difficult for them to pursue potential synergies.

Economic theoreticians and lawyers opposing railroad consolidations sometimes say that railroads can achieve the benefits of rail consolidations without consolidation, but history teaches a different lesson. The theoretical argument works when the two companies are similarly motivated and are prepared to commit equal resources -- preconditions that rarely apply in practice. A coordination project that may appear to be a win-win situation for both railroads may in reality prove impractical. UP and SP operations in Northern Utah and Nevada provide a good example.

UP and SP main lines between the Salt Lake Valley and a point near Wells, Nevada (called Alazon on the railroads) form an elongated triangle, as illustrated on the next page. The triangle's vertical base is the UP mainline between Salt Lake City and

Westbound Trains to Northern California





Ogden, used jointly by SP and UP. SP's trains from the Midwest to Northern California enter Salt Lake City from the east, travel north over the joint line to Ogden on UP trackage rights, and then turn west across the Great Salt Lake toward Alazon. Westbound UP trains from the Midwest to Northern California reach Ogden from the east, turn south over the line to Salt Lake City in the opposite direction from SP's westbound trains, and then turn west again for the run to Alazon.

Every day for more than a decade, all UP trains between the Midwest and Northern California have taken the longer route between Ogden and Alazon via Salt Lake City, rather than going straight west over the SP line. Every SP train (until 1988, they were SPT-DRGW interline trains) has taken the longer route between Salt Lake City and Alazon via Ogden, rather than going straight west on the UP line. As a result, all the trains of both railroads have squeezed onto UP's congested, 35-mile line between Ogden and Salt Lake City. UP westbound trains heading south encounter SP westbound trains heading north on this jammed track, even though the trains of both railroads are headed west for the same destinations in California. Eastbound trains encounter the same inefficiencies in the opposite direction.

Every one of these UP and SP trains loses one and a half to four hours in the Salt Lake Valley and consumes extra fuel as it travels extra miles. Every train contributes to the congestion and delays that are an everyday event on the joint line, producing distrust and frustration for employees and managers of both railroads. Every train increases rail-highway conflicts and contributes to air pollution in the Salt Lake Valley.

The two railroads have discussed a rational reorganization of this operation for years. Superficially, this would appear to be a textbook case calling for mutual cooperation in mutual self-interest. Upon analysis, however, the issues were much more complex. Each railroad analyzed the commercial implications of shorter transit times on existing traffic flows and the effects of removing the bottleneck for its relative competitiveness. Labor issues were present, and the cost uncertainties associated with substantial revision of work assignments added to the price of the potential change. Compensation issues were vexing because the two routes differed in length and maintenance complexities, and the two companies could not agree on an equitable resolution of their differences.

One of the most important factors, from UP's standpoint, was its concern that SP might be unwilling or unable to commit the resources necessary to keep its line on its landfill across the Great Salt Lake up to the maintenance standard expected for UP core routes. UP did not want to have to reduce its service standards to accommodate perceived weak links furnished by others in UP's transportation chain. As a result, the coordination did not occur, and both railroads continue to suffer delay and incur expensive extra mileage.

As a combined system, UP/SP will overcome this expensive and inefficient arrangement to their (and BN/Santa Fe's) benefit. Most UP/SP trains between the Midwest and Northern California will operate over the direct east-west line through Ogden, as Congress intended more than a century ago when it created the route. Trains operating over the former DRGW line, including BN/Santa Fe trains, will run directly west from Salt

Lake City over the former WP line, eliminating the conflicting movement of trains in the Salt Lake Valley, reducing rail traffic through the Valley and dramatically reducing delays. This is only one of many opportunities UP/SP will seize to improve rail service that clearly would not be accomplished in the absence of common control.

In the following pages, we describe how the UP/SP Operating Plan was created. We highlight some of the new and enhanced services shippers can expect from coast to coast -- services that deserve the term "unprecedented." And we explain how UP/SP can provide those services while saving hundreds of millions of dollars -- savings that will stimulate further investment in railroading and that will accrue to our customers as we work to compete with a powerful BN/Santa Fe system.

II. Development of the Operating Plan

More than 200 professionals from a variety of disciplines at both companies were involved in developing the UP/SP Operating Plan. We made this investment of valuable time and resources because we wanted our Operating Plan to provide the best possible picture of the benefits of a UP/SP merger. To develop the Operating Plan, SP and UP created nine joint teams, each of which was assigned responsibility for identifying opportunities to improve service and realize efficiencies by combining UP and SP routes, facilities and strengths:

- *Transportation Plan*. This team was responsible for planning all train service for the entire UP/SP route network. It was aided by a proprietary computer network modeling program supplied by MultiModal Applied Systems, Inc., which projects how traffic moves between hundreds of points on a rail net-

work. By studying these traffic flows, and applying their knowledge of our two systems and their accumulated expertise, members of the transportation planning team developed train schedules and blocking plans for all UP/SP train services.

- *Common Points*. Divided into seven regional sub-teams, this team was responsible for making recommendations about how to combine, coordinate and improve UP and SP services and facilities at every point served by both railroads, plus other points significantly affected by the merger. Each of the sub-teams consisted of experienced operating officers with knowledge of their region, and local operating officials at many of the common points contributed their expertise.

- *Intermodal/Automotive*. This team developed plans for new expedited train service and the terminals necessary to support them. It grappled with the complex problems of coordinating numerous UP and SP intermodal facilities in the Chicago area and the equally complex UP and SP terminal facilities in Southern California. As the Operating Plan shows, UP/SP will offer significant improvements in intermodal and automotive services across the system.

- *Centralized Functions*. We established this team to address a range of related functions that both railroads generally administer from their headquarters offices. Its members studied train dispatching, crew management, locomotive management, centralized timekeeping, loss and

damage prevention, equipment utilization, and -- perhaps most importantly -- customer service. The team studied SP and UP practices and measured performance in each of these areas, looking for the "best practices" of each.

- *Locomotive Utilization and Fuel*. This team was charged with deciding how to integrate two large fleets of locomotives into a single efficient power pool. It was also responsible for determining the savings associated with more efficient locomotive utilization and for identifying potential fuel savings resulting from changes in operations.
- *Mechanical Facilities*. By visiting and studying locomotive and freight car repair facilities on both systems, this team identified opportunities to improve the efficiency of UP/SP mechanical services. Its charge included not only heavy repair shops but also one-stop repair facilities at terminals throughout the two systems.
- *Engineering Services*. UP and SP maintenance of way personnel evaluated opportunities for a UP/SP system to efficiently maintain its tracks and signals to a high standard. They looked at productivity of track gangs, locations of maintenance of way equipment shops and opportunities to reduce material costs. They also studied more than 100 construction projects that UP/SP will carry out in order to improve service.
- *Organizational Structure*. This team determined how to combine UP and SP operating managements to oversee the merged system's operations.

- *Environmental Impact*. Complying with all Commission environmental regulations, this team prepared an environmental report of roughly 2,500 pages. Our environmental experts, aided by consultants from Dames & Moore, evaluated the air, water, noise and other environmental impacts of our proposals.

Both of us thank each of the UP and SP employees who gave their creativity and spirit, as well as immense amounts of time, to this effort.

The first step in planning any rail consolidation is to create a picture of the two railroads' operations. This is done by identifying a base year -- in this case, 1994 -- and creating a traffic data base consisting of the two railroads' base-year traffic. In this instance, the task was more complex than usual, because the base year traffic data had to be modified in numerous ways to reflect intervening events, such as the BN/Santa Fe merger, with its related settlement agreements, and the UP/CNW merger. The traffic data were then revised to take into account projected traffic gains by the merged UP/SP system from other railroads and trucks, as well as traffic generated by new marketing opportunities. Finally, the data were modified again to reflect traffic that would be lost to BN/Santa Fe when it gains access to new markets and better routes through its settlement with UP and SP. Mr. Peterson's verified statement in Volume 2 describes the development of the traffic data base in more detail.

Another essential step in merger planning is to identify current operating patterns and statistics as a baseline for proposing changes. In doing this, we had to consider SP's practices in identifying its trains. On UP, all freight trains are expected to

operate on regular schedules in accordance with a systemwide transportation plan supported by our sophisticated computerized Transportation Control System ("TCS"). While SP's principal trains, such as intermodal trains, operate on established schedules, and SP is moving toward a scheduled system for all other trains, there are large daily variations in operating patterns. Train symbols and terminals points can change from day to day, and SP terminals are authorized to implement new trains as necessary to move the freight in accordance with a general plan. As a result, we created current operating data by combining UP's transportation plan operations with a network of selected SP trains having the capacity to handle SP system business, but we recognized that individual trains might not have operated on any particular day.

We then used the MultiModal model to help us identify the new operating patterns, train schedules, blocks, and connections UP/SP will be able to offer. A detailed description of this process may be found in the Operating Plan.

III. Service Benefits of a UP/SP Merger

We are pleased to describe the many operational benefits made possible by bringing our two railroads together. UP/SP will offer literally hundreds of new and improved train services -- so many that it would have been impractical to follow the conventional practice of putting all the schedules into the Operating Plan. (The schedules are in Applicants' document depository.) Virtually every intermodal (trailers and containers on flat cars), automotive (motor vehicles and auto parts), and manifest (conventional trains of boxcars, tank cars, flat cars, etc.) train schedule on our railroads was scrapped or changed. The resulting service improvements will affect not only UP/SP, but also

connecting railroads across the country, from improved connections with shortline railroads in Northern Oregon to improved blocking for interline service with CSX to the Southeast.

An impressive merger benefit, in terms of both handling costs and transit time improvements, comes from organizing trains to bypass or run through traditional interchange and intermediate terminals. This is possible on a large scale because the projected traffic volumes of the merged system repeatedly will reach the critical mass that supports a through service. To illustrate, a UP yard in Louisiana will build trains that bypass New Orleans and run through to numerous points throughout the Southeast. Trains from the South Central states will bypass Little Rock and St. Louis, running through to Conrail via Salem, Illinois. The UP/SP yard at Little Rock will build seven daily run-through trains for the eastern connections. In addition, the critical mass of the combined volumes of SP and UP will allow, in many cases, blocking through such traditional on-line rehandling points as Houston, West Colton, North Platte and Eugene, saving a day or more from the traditional pattern of blocking cars from one major classification yard to the next.

Using the MultiModal network modeling system, we compared how 1994 traffic on the two separate systems was handled, including the inefficient routings of the two separate carriers (such as Memphis to Los Angeles via Salt Lake City, or Chicago to Oakland via El Paso) and the actual blocking patterns used by UP and SP, with how the same traffic would be handled in a merged UP/SP system with the trains and blocking plans described in the Operating Plan. The comparison showed that 1994 traffic on UP and SP could have been handled by a merged UP/SP system for at least $70 million less

in direct operating costs. These savings result from the full range of improvements made possible by a UP/SP merger, including more direct routes, faster transit times for UP/SP trains, specialized use of parallel routes, blocks that bypass intermediate terminals, and improved use of train crews, which is a prerequisite for these improvements. These savings do not include savings resulting from the improvement in SP operations and reliability that we expect as a result of the merger, because the model "corrected" all those problems before it made this comparison.

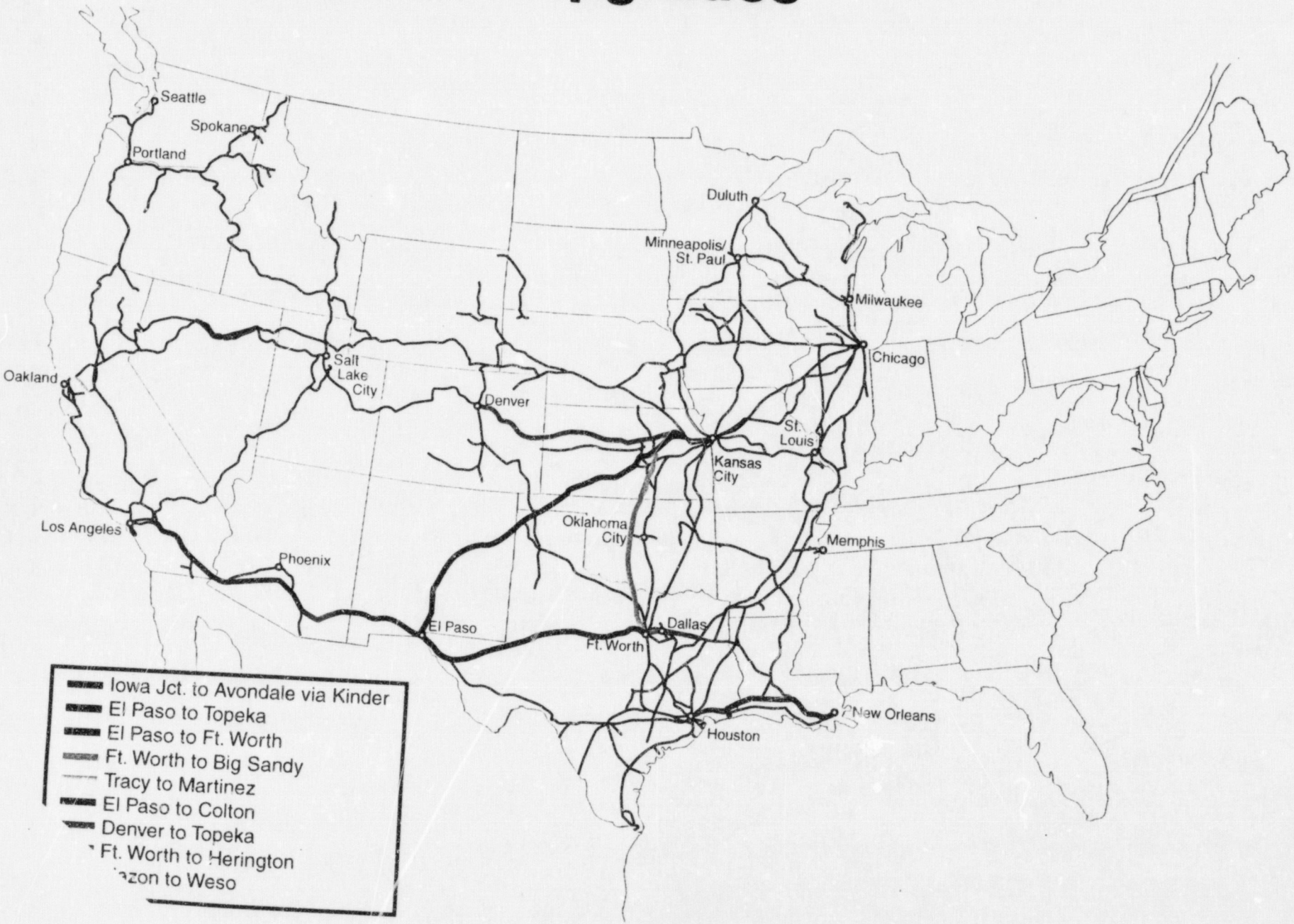
To support our new services and improved routing patterns, UP/SP will mount one of the most aggressive upgrading efforts in railroad history. We will build dozens of connections between our lines to ensure fluid and flexible operations. We will rehabilitate and modernize key SP freight yards at Roseville, California, and Kansas City, Kansas, in addition to making numerous improvements at many other yards on both systems. We will expand or build intermodal facilities in Southern California, Portland, Seattle, Salt Lake City, Denver, Chicago, St. Louis and other points. SP likely could not have afforded the projects on its lines, at least not in the foreseeable future, and the other projects would not be carried out without the incentives to establish efficient operations created by the merger.

UP/SP will also upgrade a number of line segments. The principal corridor upgrades are listed in Table 1 on the next page and illustrated on the map on the following page.

TABLE 1
CORRIDOR UPGRADES

Line Segment	Description of Upgrade	Capital Investment
SP Sunset Route: El Paso-Los Angeles	Create over 100 miles of additional double track	$221.4 million
SP Golden State Route: Topeka-El Paso	Install CTC; install $24.7 million of welded rail; strengthen bridges; construct or extend ten sidings	$145.8 million
UP T&P Line: Ft. Worth-El Paso	Install $74.3 million of welded rail and ties; extend or build 18 sidings; other track and signal work	$125.4 million
UP OKT Line: Herington-Ft. Worth	Install $25.3 million of welded rail; build, extend or upgrade 22 sidings; strengthen bridges	$91.5 million
UP KP Line: Denver-Topeka	Install $49.4 million of welded rail; build or extend 15 sidings; other track and bridge work	$86.6 million
UP Line: Iowa Jct.-Avondale	Install $16.4 million of welded rail; strengthen bridges; build and extend sidings	$44.3 million
Joint Line: Big Sandy-Ft. Worth	Build or extend sidings and double track; new crossovers	$25.2 million
SP Mococo Line: Tracy-Martinez	Install $14.7 million of welded rail; build sidings	$21.0 million
Paired Track: Alazon-Weso	Signal for two-way operation; install crossovers	$20.5 million

Major Corridor Upgrades



UP/SP will also remove clearance restrictions that bar use of efficient, full-height doublestack cars on SP's lines between Southern California and Portland and between Sacramento and Reno, projects SP has not been able to fund on its own.

A. New and Improved Train Service

In the following pages, we discuss some of the principal service improvements provided by a UP/SP merger. To organize this presentation, we focus on specific routes, corridors and service areas. Where appropriate, we also mention some of the BN/Santa Fe service improvements that we expect to result from our settlement, although it will be up to BN/Santa Fe management to decide how to take advantage of its new opportunities.

- ***The I-5 Corridor/Pacific Crescent Route***. The UP/SP merger, with the accompanying BN/Santa Fe settlement, will create a new era of rail transportation on the West Coast. Both UP/SP and BN/Santa Fe will offer direct and competitive single-line rail service for the first time in history between California and the port cities of Seattle and Tacoma, as well as other Pacific Northwest points such as Spokane and gateways to Western Canada. Today, SP connects at Portland with UP and BN, neither of which is motivated by the relatively short hauls it would receive when connecting with SP to provide a premium intermodal service with SP. SP intermodal trains from California terminate at Portland, where a large part of the traffic shifts to busy Interstate 5 and travels by truck to Tacoma or Seattle. SP's intermodal service is further hampered by 22 tunnels and four bridge portals in the Cascades and Northern California that cannot accept high-cube doublestack

shipments. On SP, there have always been higher-priority needs for capital funds than removing those impairments.

After merger, these inefficiencies and limitations will be swept away. UP/SP will target the really heavy volumes of traffic in this corridor, which are now on trucks on Interstate 5, not on any railroad. UP/SP will provide daily expedited intermodal service between Seattle and Southern California, serving Oakland and the northern San Joaquin Valley on the way. UP/SP will also operate multiple daily intermodal trains between Southern California and Portland; several trains will operate on schedules of 32.5 hours or less. In place of SP's mixed intermodal and carload trains between Portland and Oakland and between Oakland and Los Angeles, UP/SP will provide dedicated intermodal trains.

UP/SP will also introduce, for the first time in history, through intermodal trains between New Orleans and the Pacific Northwest, operating by way of Southern California to take maximum advantage of faster rail lines and increased capacity. These new trains will provide intermodal services not available from any rail carrier today, transporting shipments between New Orleans and San Antonio (as well as Houston, which is already served by BN/Santa Fe) and Northern California, Portland and Seattle/Tacoma.

UP/SP will boost manifest train service on the West Coast as well. SP's huge Roseville Yard northeast of Sacramento stands at the crossroads, the major hub through which all SP traffic flows through Northern California. When Roseville becomes congested, as it often has, all traffic suffers, including I-5 Corridor traffic.

Roseville was once a highly efficient facility capable of processing a large volume of traffic. In recent years, seventeen classification tracks, five receiving tracks and four departure tracks have been taken out of service.

UP/SP will restore Roseville Yard by investing over $38 million in upgrading and rehabilitating the yard and constructing new track, making it the classification hub for Northern California and allowing it to take over much of the classification work now performed at other yards throughout California and Oregon. All out-of-service tracks in the bowl will be restored, bringing the total up to 40 bowl tracks, 23 receiving tracks, and 22 departure tracks. Also planned are a new hump computer and weigh-in-motion scale, new master and group retarders, track reconfigurations and a bypass track around the yard, all of which will further improve the efficiency of the yard. This investment will permit Roseville to serve efficiently as the distribution hub for traffic flows converging in Northern California.

Roseville Yard will send a daily freight train to UP's major classification yard at Hinkle, near Pendleton, Oregon, carrying traffic to Eastern Washington, Idaho, Montana and the CP gateway at Eastport, Idaho. Roseville will also prepare a Seattle block that will bypass the yards at Eugene and Portland without switching. Other trains will be blocked at Roseville for delivery to two shortline railroads created out of SP branch lines in recent years, the Central Oregon & Pacific and the Willamette & Pacific, improving service for every customer on those lines. UP/SP will operate a train directly to BN carrying interchange traffic that will include

shipments benefitting from the agreement with BN/Santa Fe that allows UP/SP to compete for traffic throughout the upper Pacific Northwest.

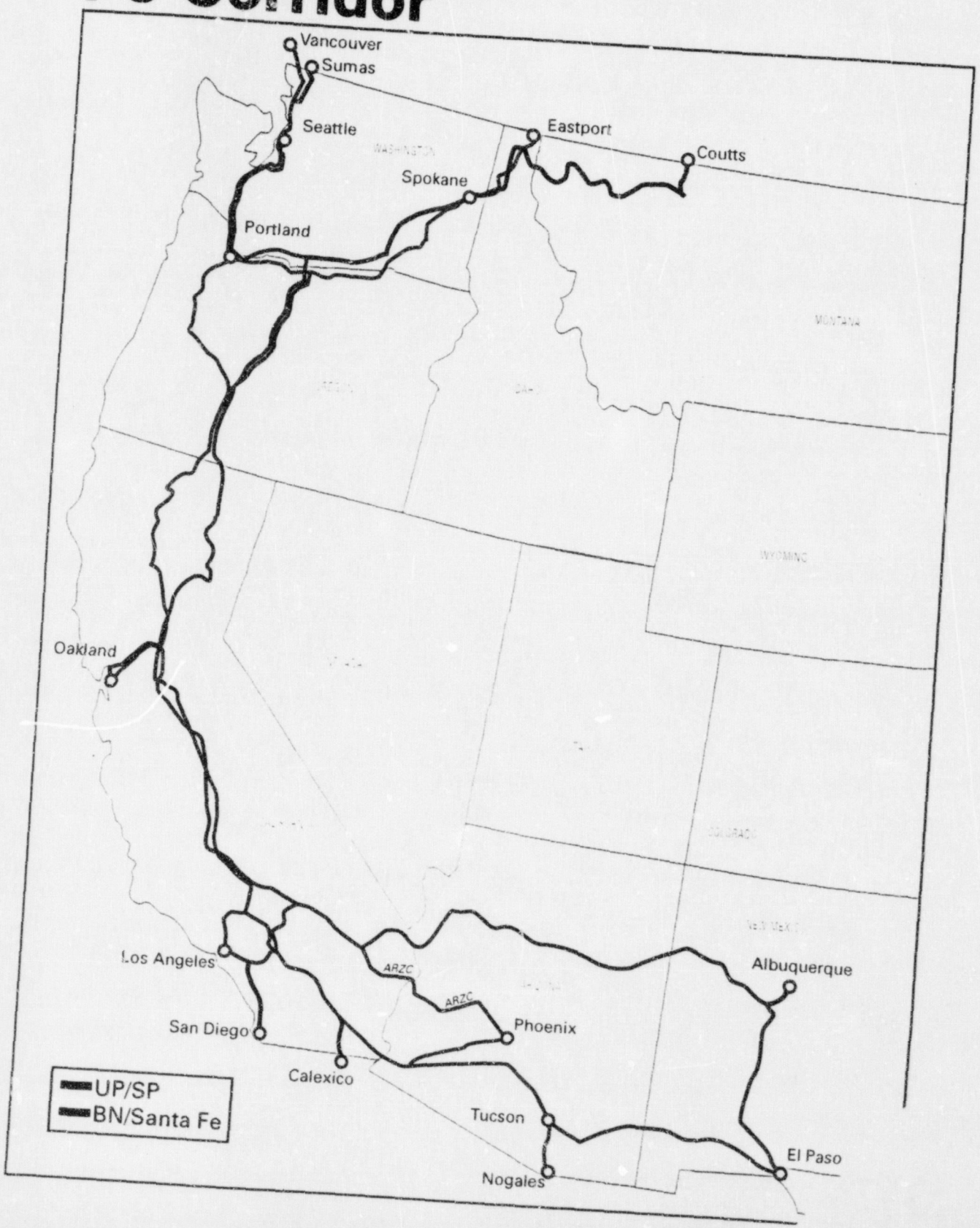
Southbound traffic will be gathered by the reverse process and distributed in through trains and blocks from Roseville to freight yards in Southern California and all the way to Houston. Roseville, in its new role, will not only block to major yards like West Colton but also will make direct blocks for regional service yards in Southern California such as Anaheim, Gemco and City of Industry. Through trains from Northern California will run directly to or via these regional industry support yards, not only saving time in delivering their cars but also freeing up West Colton's capacity for other work. This is a benefit that SP could not achieve alone, and it comes about only because UP and SP together will have the ability to extend the I-5 Corridor and invest the resources necessary to develop this route.

We expect BN/Santa Fe to provide through freight service in this corridor as well, connecting Southern California with Seattle/Tacoma, Vancouver, B.C., and the Canadian gateways at Blaine and Sumas, Washington, and Coutts, Alberta, using trackage rights over UP/SP and its purchase of a UP line in Northern California. Both carriers will also serve the San Francisco Bay Area from both the Pacific Northwest and Southern California. The following simplified map depicts new single-line services by both railroads on the West Coast.

- ***The Overland Route***. Historically, the premier rail route between the Midwest and Northern California was the original transcontinental rail line. CNW-UP-SP route via Ogden, Utah. The CNW-UP-SP "Overland Limite

New Single-Line Service:

I-5 Corridor



once one of the most prestigious passenger trains in America and the fastest way to travel between Chicago and San Francisco. Today, BN/Santa Fe owns the leading service route and the largest share of rail traffic. Its #199 and #991 trains, although they have been slowed somewhat recently by congestion resulting from traffic growth on Santa Fe, are sometimes regarded as the fastest freight trains in the United States.

Neither SP's Chicago-Oakland route nor the somewhat faster UP route can match BN/Santa Fe today in competing for premium traffic, such as United Parcel Service business and the traffic of LTL motor carriers. UP's route provides multiple track east of Ogden and relatively gentle grades, but it is too circuitous west of Ogden to attract premium traffic. SP's route is not competitive for any traffic requiring expedited handling, and its climb over the Sierra Nevada Mountains via Donner Pass includes tunnels and snowsheds with inadequate clearances for high-cube doublestack containers. SP has had little incentive to spend the $18 million necessary to remove these restrictions, as its route has similar restrictions in Colorado that would be prohibitively expensive to remove.

SP's Central Corridor route between Ogden and Pueblo, Colorado, also suffers from clearance restrictions, and it climbs two mountain passes, one of which includes one of the steepest mainline grades in U.S. railroading. Because of this grade -- to 10,221-foot Tennessee Pass near Vail, Colorado -- SP continuously stations eighteen $2 million locomotives at Minturn to help trains over a 28-mile segment. This is an expensive railroad to operate.

East of Pueblo, SP operates over former MPRR track, which still has large amounts of jointed rail. SP, which as the tenant moves over 97 percent of the traffic on this line, is responsible for the costs of maintaining it but has been unable to dedicate the capital to upgrade it, and UP lacks the incentive. Overall, SP's Central Corridor route has so many disadvantages that SP moves some of its Chicago-Oakland intermodal traffic through El Paso, hundreds of miles out of the way.

UP/SP will combine the advantages of UP's direct, high-capacity line between Chicago and Ogden with SP's direct Ogden-Oakland line to recreate the traditional Overland Route. UP/SP will use this route to provide the fastest rail service between Chicago and Northern California. We intend to match or beat BN/Santa Fe trains #199 and #991 reliably and consistently.

The fastest westbound train will make the run to Oakland in about 53.5 hours. It will stop in Roseville to set out traffic for a connecting train that makes early morning deliveries to UP's modern Lathrop intermodal facility near Stockton and to Fresno. The eastbound version will beat BN/Santa Fe's fastest schedule from the Bay Area to Chicago and will pick up connecting traffic at Roseville from Fresno and Lathrop. Other intermodal schedules will provide reliable service at lower cost than these premium trains. UP/SP will also operate intermodal trains between Kansas City and Oakland via the Overland Route, as well as between St. Louis and Oakland, serving Lathrop en route.

UP/SP will provide improved service for automotive traffic on the Central Corridor route, especially compared to current SP service over Tennessee Pass.

A through train from Chicago to Milpitas, California, will carry blocks of multi-level freight cars carrying automobiles for Denver, Salt Lake City, Martinez, California (to serve UP/SP's Bay Area auto facility at Benicia), and Milpitas. This through train, operating on a 70-hour schedule, will eliminate the need to switch the automobile shipments at a hump yard, reducing the risk of damage to vehicles. A similar automotive train will operate from Kansas City, and a connection from NS, directly to Denver and then to Ogden (dropping shipments for Salt Lake City) and Martinez.

UP/SP manifest freight service on the Overland Route will be superior as well. Traffic to Conrail points from Northern California and other Overland Route origins will move to North Platte, the world's largest railroad yard, where it will be reorganized into run-through trains with blocks for Elkhart, Indiana; Pittsburgh, Pennsylvania; and Selkirk, near Albany, New York. Frequency will be doubled. SP carload shippers, in particular, will enjoy substantial improvements in transit time over the UP/SP Overland Route as a result of these improvements, because SP does not now pre-block any traffic for Conrail at any location. North Platte will also build through trains with six blocks for NS at Kansas City and a new train to BN/Santa Fe at Argentine Yard in Kansas City.

Roseville will run daily through trains to St. Louis and Chicago with no en route classification. For CSX, GTW and NS Chicago traffic, Roseville will prepare a block of traffic that will operate without intermediate switching to the BRC's rebuilt double-hump Clearing Yard in Chicago. CSX asked us to deliver its cars to Clearing because BRC blocks CSX traffic into through trains and blocks destined

to points throughout the Eastern United States, including Grand Rapids, Cumberland (Maryland), Willard (Ohio), Cincinnati, Louisville, Nashville, Danville (Illinois), Waycross (Georgia) and Evansville (Indiana). GTW trains assembled by BRC carry blocks of traffic for points throughout Michigan and into Eastern Canada, including Flint, Battle Creek, Flat Rock (Detroit), Sarnia (Ontario), Toronto and Montreal. BRC makes seven classifications for various destinations on NS. Finally, SP traffic from Oregon to the Midwest will be rerouted over the much shorter UP route via Portland and Idaho, saving two to three days compared to current SP service.

At the west end of the Overland Route, heavier trains, such as unit grain trains, will continue to use the gentler grades of UP's Feather River route. UP/SP will maintain regular freight service over this line as well, providing service to and from the Midwest for shippers at locations such as Marysville and Oroville, California, and in Northern Nevada. Finally, UP/SP will maintain daily manifest service between Denver and Salt Lake City via Grand Junction to serve Colorado and Utah.

- ***Midwest-Southern California Service***. Aided by trackage rights over BN/Santa Fe between Hutchinson, Kansas, and Chicago, SP's Golden State route is the shortest rail route between Chicago and Los Angeles. Together, UP and SP will devote the capital needed to upgrade this route and make it competitive with BN/Santa Fe's high-speed transcontinental mainline. UP/SP will install a $68.2-million Centralized Traffic Control system between Herington and El Paso, add

$24.7 million worth of welded rail, and construct or extend ten sidings and sections of double track at a cost of $45.7 million.

These improvements are essential if this route is to be competitive. Most of the passing tracks on the route range from 15 to 20 miles apart -- a few further than that, some less -- but overall the sidings are very widely spaced for today's traffic volumes. Moreover, trains are dispatched by "DTC," or Direct Train Control, in which the dispatcher, by radio, authorizes the train to occupy certain blocks and instructs the crew where to take a siding. This is a slow, labor-intensive means of dispatching trains. Since the dispatcher can only deal with one situation at a time, it can result in delayed responses to other waiting trains. The sophisticated new programs available for CTC will create a largely automated operating plan for a district and reduce the time-consuming interactions between dispatcher and crews.

CTC will dramatically shorten the time required for "meets" and "passes," because manually operated switches will be upgraded to power switches controlled by the dispatcher. No longer will the crew have to leave the cab to take a train into and then out of a siding. Today, at only seven sidings (Efaw, Galiinas, Alamagordo, Orogrande, Liberal, Planeport and Whiteside), switches have been motorized and can be radio-controlled from the cab, so that the crew can line switches remotely and enter and exit without leaving the train. At the other 42 sidings on this line, taking a siding involves a crew member dropping off the train, opening the switch, closing it again after the train has pulled into the siding and walking to the head of the train, a mile or more away. After the meet has been accomplished, the train will

pull out and stop once it is back on the main; its crew member will line the switch and walk another mile back to the locomotive. If an 8,000-foot train is involved -- and SP operates many -- the total distance walked by the crew member will be over three miles, which can require an hour, all of which is dead time for that train. (The walking can be avoided, but only at the expense of leaving switches open, which requires one or more opposing trains to stop as well.) Very large improvements in transit times will therefore be realized on this route from a CTC and siding program.

Together, these investments, which SP likely will not be able to make in the near future, will permit the Golden State route to offer high-speed service and handle far more trains. UP/SP will also spend over $220 million to create more than 100 additional miles of double track on SP's Sunset Route between El Paso and Los Angeles to improve performance of these trains after they pass El Paso.

UP/SP will coordinate operations over UP's Central Corridor route via Fremont, Nebraska, and Ogden with those over SP's Golden State route via El Paso to maximize service and reliability and reduce congestion. All manifest traffic between Southern California and Chicago or the Upper Midwest will be shifted to UP's Central Corridor line via Ogden, with its greater capacity and efficient North Platte hump yard. The Golden State route will then be freed to handle primarily expedited intermodal and automotive trains. Seventeen of 22 through trains on the line will be expedited trains, many of which will take advantage of UP/SP trackage rights by using new UP/SP access points to the Santa Fe line west of Chicago.

This route will carry manifest traffic only between St. Louis and Kansas City and Southern California, and to and from local points on the line.

When we concentrate fast trains on one line and manifest traffic on another, we effectively increase capacity on both. When trains operate at similar speeds, they cause much less disruption and delay than trains operating at a variety of speeds. In addition, by removing several high-speed westbound trains from the UP line via Ogden, we will make it possible for remaining eastbound expedited trains on that line to operate more reliably.

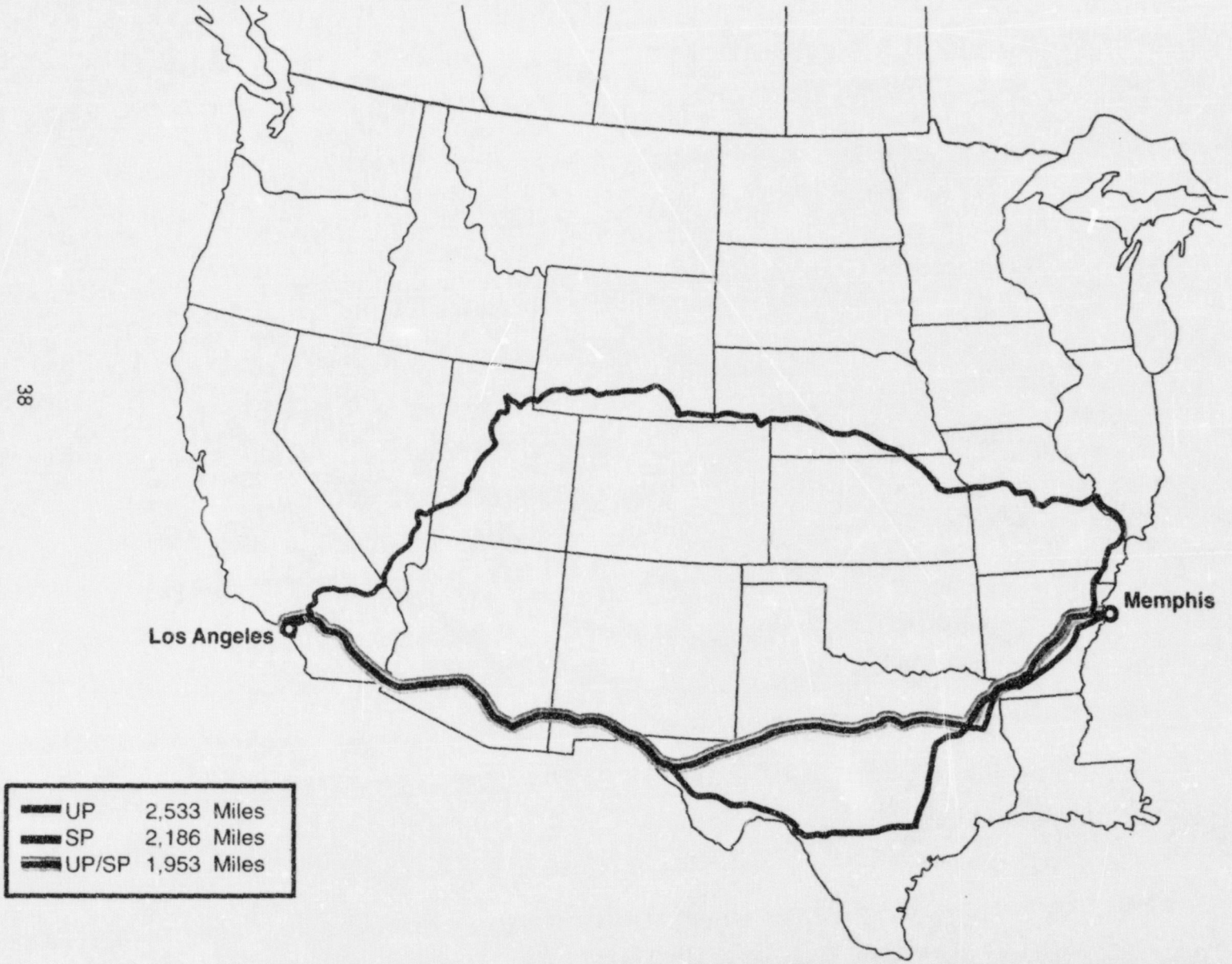
From Chicago to Southern California, UP/SP will offer a range of intermodal services via El Paso, including a fast intermodal schedule (to our new "Inland Empire" intermodal facility near San Bernardino) designed to compete against BN/Santa Fe for LTL traffic that neither UP or SP can handle competitively today. UP/SP will also offer reliable "3rd AM" intermodal trains to Los Angeles from the "Global" intermodal facilities in Chicago, the fastest reaching Los Angeles in 54 hours. Eastbound, UP/SP intermodal trains from Southern California to Chicago and intermediate points will operate over both routes, providing services comparable to those offered westbound via El Paso. UP/SP will also improve St. Louis-to-Los Angeles intermodal service, providing a 50-hour, 35-minute schedule from St. Louis to the Inland Empire ramp and a timing of 51 hours, 45 minutes to Los Angeles. We plan to retain the famous SP name for this fast train -- the "Blue Streak Merchandise" -- and we have improved its schedule by more than eleven hours.

The Golden State route will provide expedited automotive train service as well. UP/SP will operate a dedicated automotive train from Chicago to the UP/SP automobile unloading facility at Mira Loma in Southern California. This train will set out autos destined for Phoenix during a stop at Tucson. UP/SP will supplement this service with a second westbound automotive train from Kansas City (and the NS connection) via Herington, Kansas, where its cars will be joined with other automotive shipments from St. Louis and from CP at Kansas City to Mira Loma and Long Beach, California. The automotive shipments handled through Herington will avoid the damage risks associated with going over the hump at North Platte.

- ***Memphis-Texas-California Service***. As the following maps confirm, SP's route from Memphis to California is circuitous, dropping into South Texas before turning West. From Dallas, SP's route to California first runs straight south for 225 miles before it makes the turn west. UP's route between Memphis and California via St. Louis and North Platte is far more circuitous. The BN/Santa Fe route is the most direct single-line route available.

The UP/SP merger will change that, creating the shortest and fastest single-line route between Memphis and Los Angeles. The route will consist of UP and SP lines between Memphis and Dallas, UP's T&P line between Dallas and El Paso, and SP's Sunset Route between El Paso and the West Coast. This route is even more advantageous for service between Dallas/Ft. Worth and California, eliminating

Los Angeles–Memphis



Los Angeles–Dallas

significant circuity on both SP and UP, as illustrated on the maps comparing UP/SP routes with current routes between Southern California and both Memphis and Dallas.

UP/SP will offer excellent service between Memphis and Southern California. Each night, twin intermodal trains carrying doublestack and conventional intermodal equipment will depart the new UP/SP intermodal facility in West Memphis, arriving in Southern California 56 hours later. One of these trains will also carry automotive traffic to Long Beach and a block of intermodal traffic for Phoenix. Two eastbound intermodal schedules will operate to Memphis in 58 hours or less. In both directions, these trains will be faster than the fastest SP services today. UP/SP's dedicated intermodal service from Dallas to Southern California will reach the new Inland Empire intermodal ramp in less than 43.5 hours and will serve other UP/SP intermodal facilities in Los Angeles. Finally, a pair of Memphis-Oakland trains will compete head-to-head against BN/Santa Fe service over routes that are virtually identical in length.

UP/SP will assemble westbound manifest traffic from Memphis and its Memphis connections at SP's yard in Pine Bluff, which will prepare a through manifest train for West Colton Yard and City of Industry Yard in the Los Angeles Basin. This train will pick up cars for those destinations in Ft. Worth. In Southern California, the hump yard at West Colton will build a train for Ft. Worth and North Little Rock, Arkansas, which will connect to trains for Memphis and all eastern points.

- ***The Sunset Route***. SP's historic Sunset Route is the shortest rail route between Los Angeles and both Houston and New Orleans. The UP/SP merger will improve reliability on this route by increasing capacity west of El Paso and by diverting part of the traffic east of El Paso to the more direct T&P route, reducing train conflicts on the SP single-line track line across West Texas.

As a result, train schedules will be improved. The three New Orleans-to-Southern California intermodal trains will operate five to eighteen hours faster than today's SP programmed schedules. The Houston-Los Angeles schedules will shave two to nine hours off current SP schedules. SP's "LBHOT" train from Long Beach to Houston will operate three hours faster than today as a result of increased track capacity, and with greater reliability as SP's schedule performance has suffered from inconsistency in the past.

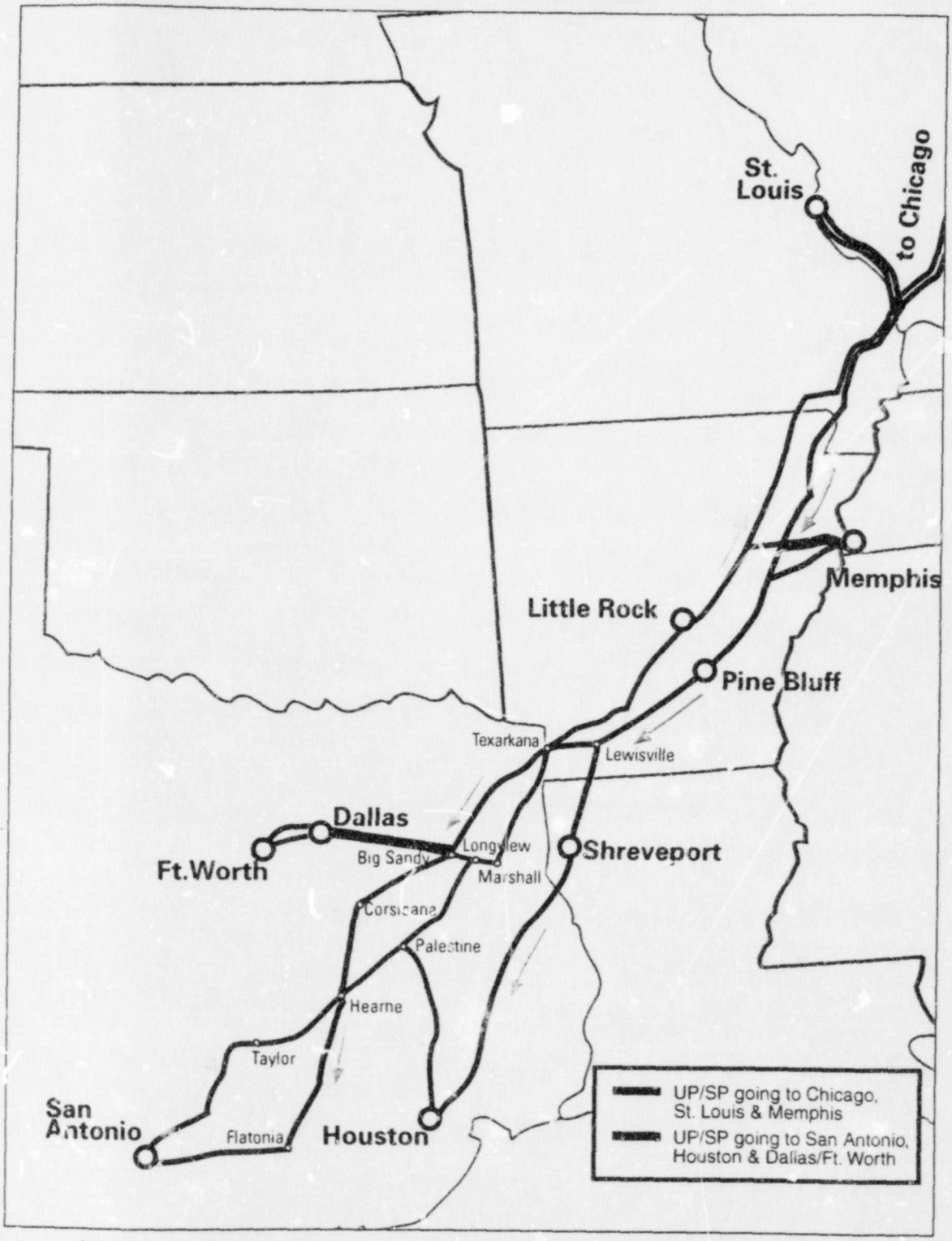
- ***Mid-Continent Services***. UP and SP operate a web of routes connecting Chicago, St. Louis and Memphis at the north with Houston, San Antonio, Dallas/Ft. Worth and the Mexican border at the south. Each railroad has a spine line oriented northeast-southwest through Arkansas, with a hub freight yard. On SP, the spine is the SSW mainline between St. Louis and Texarkana, and the hub is a large hump yard at Pine Bluff. On UP, the spine is the MPRR mainline running diagonally across Arkansas, with the hub at North Little Rock, site of another major hump yard. The Arkansas rail map is simple compared to Central and Eastern Texas, where UP and SP form a complex network of rail lines connecting the four corners of Texarkana, Dallas-Ft. Worth, San Antonio and Houston.

We have determined that, even with BN/Santa Fe's diversions of traffic from UP/SP as a result of our settlement, neither the UP routes nor the SP routes could separately handle the traffic of both roads. UP's route via Little Rock is pressed to capacity. SP's route has somewhat more flexibility, because traffic between St. Louis and the West Coast was rerouted several years ago over the Golden State route. The capacity of both routes is needed; the question was how best to employ them.

We settled on a directional rail network, with traffic moving primarily north on UP's line through Little Rock and primarily south on SP's line through Pine Bluff. We continued the directional concept throughout the eastern half of Texas, where, in general, UP lines will form the northbound network and SP lines will be used for southbound traffic. The next page is a map depicting the northeast-southwest traffic flows on this directional system.

Directional operation will provide remarkable opportunities to improve service for our customers. The SP lines and most of the UP lines are single-track railroads. As all railroaders know, the primary cause of train delay on single track is meets between trains. In fact, the delay associated with train meets is such an unavoidable part of rail operations that it usually is not even classified as "delay," although movements of shippers' products and costly and scarce rail equipment are slowed. As additional trains are added, the number of meets and the amount of congestion increases geometrically.

Directional Operation
South Central Area



Using a directional system, hundreds of meets can be avoided every day. Trains traverse the railroad much faster without adding new track capacity, and the railroad operates more smoothly. The train dispatcher's job is much simpler using directional running, as trains generally follow each other, except when a fast train overtakes a slower one. With directional running, two separate single-track lines can provide capacity equal to double track, and much more capacity when both single tracks are equipped with numerous sidings and Centralized Traffic Control, as are many of these UP and SP lines.

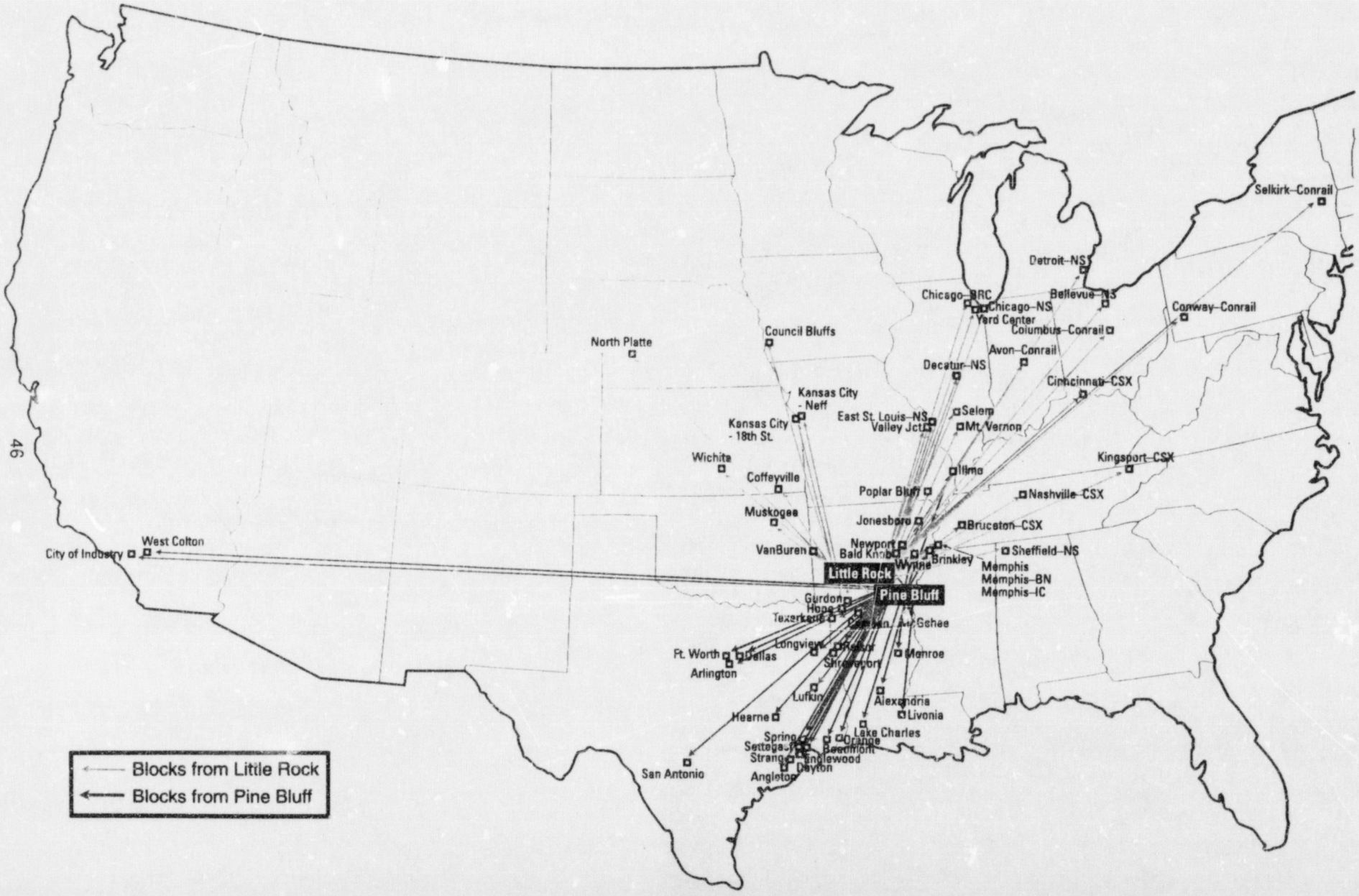
Directional operation is especially important for SP's "Rabbit," the single-track line segment running from Houston to Lewisville via Shreveport. (The line gets its nickname from the undulating terrain it traverses). It is a heavy-duty line handling high volumes of chemicals traffic, but it lacks CTC, or even block signals on portions of the line. Manual dispatching, coupled with long intervals between sidings (many ranging from 17 to 25 miles), severely limits the "Rabbit's" capacity when operated bi-directionally. If it could be used in one direction only, trains could be moved continuously, one behind another, at steady speeds, and thus a strong but unimproved line could be converted into a high-capacity line without major capital expenditures for CTC and other improvements that would be required if an independent SP were to seek to enhance this line's capacity. Directional routing will also significantly increase the routing of hazardous material shipments from the Gulf Coast area on block signal-protected lines.

The Operating Plan uses the "Rabbit" in one direction, southbound, handling the traffic of both systems moving toward the Gulf. In this plan, the lack of interference from opposing movements will increase reliability, while reducing transit times on the "Rabbit" from 2.7 to 4 hours per train.

Comparable bi-directional improvements will improve Ft. Worth service in the Mid-Continent Corridor by pairing trackage between Texarkana and Big Sandy, where SP's tracks will be used southbound, and UP's tracks will be used for northbound traffic. An even more extensive bi-directional pairing will speed service to San Antonio and Mexico. SP's line will be used for southbound traffic from Texarkana to San Antonio via Corsicana and Flatonia, while UP's line from San Antonio to Texarkana via Taylor and Hearne will be used northbound. These improved routings, which could not occur without merger, will yield substantial savings in transit time, expansion of capacity without capital expense, and reduction in operating costs.

Shippers will reap enormous benefits from UP/SP's use of directional routes. Not only will our trains operate faster and more reliably, but our freight yards -- the hubs on the spines -- will be assigned specialized functions to facilitate more detailed blocking and improved service. As shown on the following diagram, UP's North Little Rock yard will become a northbound blocking specialist, making new trains and blocks for the Upper Midwest and the entire eastern third of the country. It will build daily trains for NS and CSX via the Memphis gateway, as well as a new train for BN/Santa Fe at Memphis. The NS trains will run through to Sheffield,

Blocks from Little Rock and Pine Bluff



Alabama, with a block for Kingsport, Tennessee. The CSX train will run through to Nashville. UP/SP will also operate a through train to CSX via Salem, Illinois, which allows traffic to bypass St. Louis and save a day en route. This train will run through to Cincinnati. A new pre-blocked train will run from Little Rock to East St. Louis for NS with blocks for Detroit; Chicago; Decatur, Illinois; and Bellevue, Ohio.

Little Rock will also build several run-through trains for Conrail, all of which will bypass St. Louis using our connection at Salem, Illinois. UP/SP will deliver a solid train of traffic for Conway Yard at Pittsburgh, and another for Avon Yard at Indianapolis. A third train will run through to Selkirk Yard, near Albany, New York, with a new block of traffic for Columbus, Ohio. Two through trains from Little Rock to the BRC Clearing Yard in Chicago, one for Clearing's westbound hump and the other for its eastbound hump, will offer efficient connections throughout the Upper Midwest.

NS and CSX will deliver pre-blocked traffic from their Eastern facilities to SP's Pine Bluff Yard, which will serve as our south and west blocking specialist, processing shipments from throughout the Eastern United States and the Upper Midwest. The chart shows how Pine Bluff will build through trains and blocks to points as distant as Southern California and to every significant UP/SP rail facility in Louisiana and Texas. Trains will operate from Pine Bluff not only to major terminals such as Ft. Worth, Houston and San Antonio, but also directly to chemical coast yards at Dayton, Beaumont, Orange and Lake Charles, to Livonia Yard (for service to Baton Rouge and New Orleans), and to Strang Yard on the Houston Ship

Channel. Blocks to Angleton and Freeport will be carried to destination without classification. SP's Strang Yard will make blocks for Conrail which will not require route switching. These trains will save most shipments a day or more in transit by avoiding further switching at Houston and other facilities.

UP/SP will use field blocking, which involves running trains of traffic gathered at the regional service yards directly to a distant yard without switching at a nearby classification yard. For example, cars from the PTRA and HBT in Houston are now classified by UP and SP in Houston. Under the Operating Plan, HBT will prepare a new train for Little Rock, bypassing interchange and switching at Houston.

Not all trains in this corridor will be switched at Little Rock or Pine Bluff. At Houston, UP/SP will build a new through train operating directly to Conrail at Salem with blocks for Indianapolis and Pittsburgh. Livonia will also prepare a new through train for Conrail, blocked in the same way with traffic from Baton Rouge, New Orieans and connecting roads. UP/SP will continue to operate a train directly from Freeport and Angleton, major shipping points on the Gulf Coast south of Houston, to Chicago. Similar through train service will be provided for southbound traffic.

- ***Mexico Service***. Rail service to and from Mexico will be significantly improved. In addition to the services we have already described, UP/SP will offer the first all-rail intermodal service between Southern California and the Laredo gateway. Today, SP provides limited intermodal service on this route by unloading trailers and containers at San Antonio, where they are turned over to motor carriers

for movement into Mexico. (UP's route from Los Angeles to Laredo via Wyoming is too circuitous to be competitive.) This lack of all-rail service limits the development of commerce between California (and the Pacific Rim) and Eastern Mexico. UP/SP will remedy the problem with new Southern California-Laredo intermodal service.

UP/SP will also improve carload service to Mexico. In spite of UP's progress in pre-clearing shipments through customs on the Mexican border, it still must hold many shipments destined for Mexico because of border crossing paperwork or congestion at the border. UP uses its Ney Yard in Ft. Worth, among others, to stage these shipments to Mexico because it does not have sufficient track space to hold trainloads of cars closer to Mexico. This causes many shipments to move out of route to Ft. Worth and delays when the cars are released. After merger, UP's SoSan Yard in San Antonio (other than the intermodal ramp) will be dedicated entirely to Mexican traffic and will serve as a staging location for shipments awaiting clearance across the border, saving a day or more for many shipments.

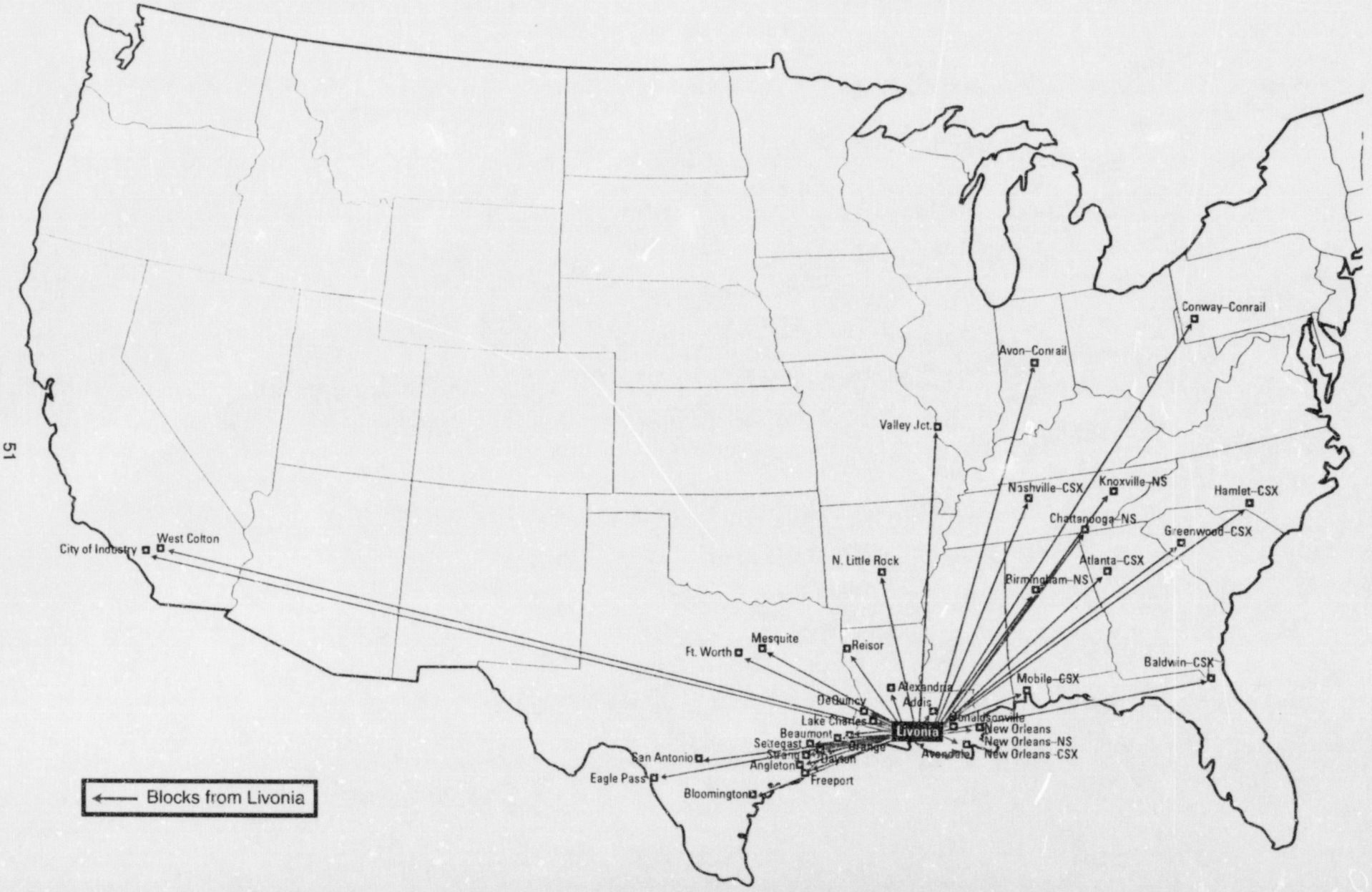
- ***New Orleans Gateway Service***. UP/SP will bring significant improvements to train service between Houston and New Orleans and beyond in conjunction with connecting carriers via the New Orleans gateway. UP/SP will operate over two routes between Houston and New Orleans, allowing it to segregate traffic by type in order to improve service and reliability. Although a segment of one of these routes -- the current SP line -- will be sold to BN/Santa Fe, UP/SP will retain trackage rights, allowing it to use that route primarily for faster intermodal and

through trains. Most manifest trains will use the more northerly UP route, where UP's newest hump yard, located at Livonia, Louisiana, east of Baton Rouge, will be expanded so it can block eastbound traffic to numerous points throughout the Southeast and westbound traffic for system yards as far away as Southern California. UP/SP manifest trains with work at points such as Lake Charles, Orange and Beaumont will use the SP route to Iowa Junction, Louisiana, then transition via an upgraded connecting line to the UP route to and from Livonia.

By focusing manifest traffic at Livonia, UP/SP and its Eastern connections will provide greatly improved service through New Orleans. Today, UP builds run-through trains for NS and CSX, but with limited blocking. All cars delivered by SP to NS and CSX in New Orleans must be switched there. After merger, Livonia will build multiple pre-blocked run-through trains for destinations throughout the Southeast, saving transit time for most shipments.

As shown on the following blocking chart for Livonia Yard, run-through trains and blocks will operate from Livonia to CSX yards at Mobile, Alabama; Greenwood, South Carolina; Atlanta, Georgia; Hamlet, North Carolina; Nashville, Tennessee; and Baldwin, near Jacksonville, Florida, with a block of local traffic for New Orleans. Run-through trains for NS will operate to Chattanooga, Knoxville and Birmingham, again with a New Orleans block. New through train services from Strang, Orange, Beaumont, Lake Charles and other points on the Gulf Coast will expedite traffic getting to Livonia as well. We expect shipments from Gulf Coast shippers to most points in the Southeast to save a day or more compared to current service.

Blocks from Livonia (Louisiana) Yard



We also expect BN/Santa Fe to offer significant new service via the New Orleans gateway. BN/Santa Fe will purchase SP's line from New Orleans to Iowa Junction, Louisiana, and will receive trackage rights from Iowa Junction to Houston, as well as rights to service many large shippers along the Gulf Coast. BN/Santa Fe will be able to offer service between New Orleans and the West Coast via Houston or Beaumont on a very direct and efficient route. It will be able to connect New Orleans and the Pacific Northwest either via either Ft. Worth and Denver or its new West Coast route through Stockton, California. And BN/Santa Fe will be able to deliver shipments originating on the Gulf Coast to eastern connections at New Orleans or Memphis or transport them via Dallas/Ft. Worth to points throughout the Midwest.

- **Texas Service**. Throughout Central Texas, UP/SP will employ directional operation and traffic segregation to keep trains moving smoothly and improve the reliability of our service. UP/SP trains between Ft. Worth and Houston will run over the UP line between Houston and the important junction point at Hearne, Texas, half way to Dallas/Ft. Worth. Between Ft. Worth and Hearne, most southbound trains will use the UP line, while northbound trains will operate over the high-capacity SP line to Ft. Worth and Dallas. Traffic will be routed in this manner so that heavy coal trains, which run south, will use the UP line, which has lower grades. However, by combining the SP route between Hearne and Dallas with the UP route south of Hearne, UP/SP will be able to accommodate heavily loaded 286,000-lb. grain and coal cars that UP's existing route cannot handle.

Between Ft. Worth and San Antonio, manifest trains will use the direct UP route via Waco and Taylor, Texas, in both directions to take advantage of its speed and shorter mileage. Heavier trains to San Antonio and South Texas coal plants will stay on the UP to Hearne, where they will join the flow of southbound traffic on the SP line from Pine Bluff toward Flatonia and San Antonio, which has lower grades than the UP line. These routes are illustrated in the Operating Plan.

UP/SP will also assign specialized roles to its two routes between Houston and San Antonio. In general, priority traffic will use the current SP line, and rock and other restricted-speed trains will use the present UP line. Rock, sand and aggregates traffic moves in volume through that area. Operating that traffic on one line will allow us to use the other for faster trains. Since heavy aggregates trains will not be delayed by faster intermodal trains, their reliability will be improved as well.

- ***Pacific Northwest-Denver-South Central Service***. In a settlement agreement reached in connection with its recently completed merger, BN/Santa Fe granted SP trackage rights over BN/Santa Fe lines between Pueblo and Ft. Worth. UP/SP will combine these trackage rights with UP's route network north and west of Denver and the UP/SP network south and east of Ft. Worth to provide through service between the South Central region and the Pacific Northwest via Denver.

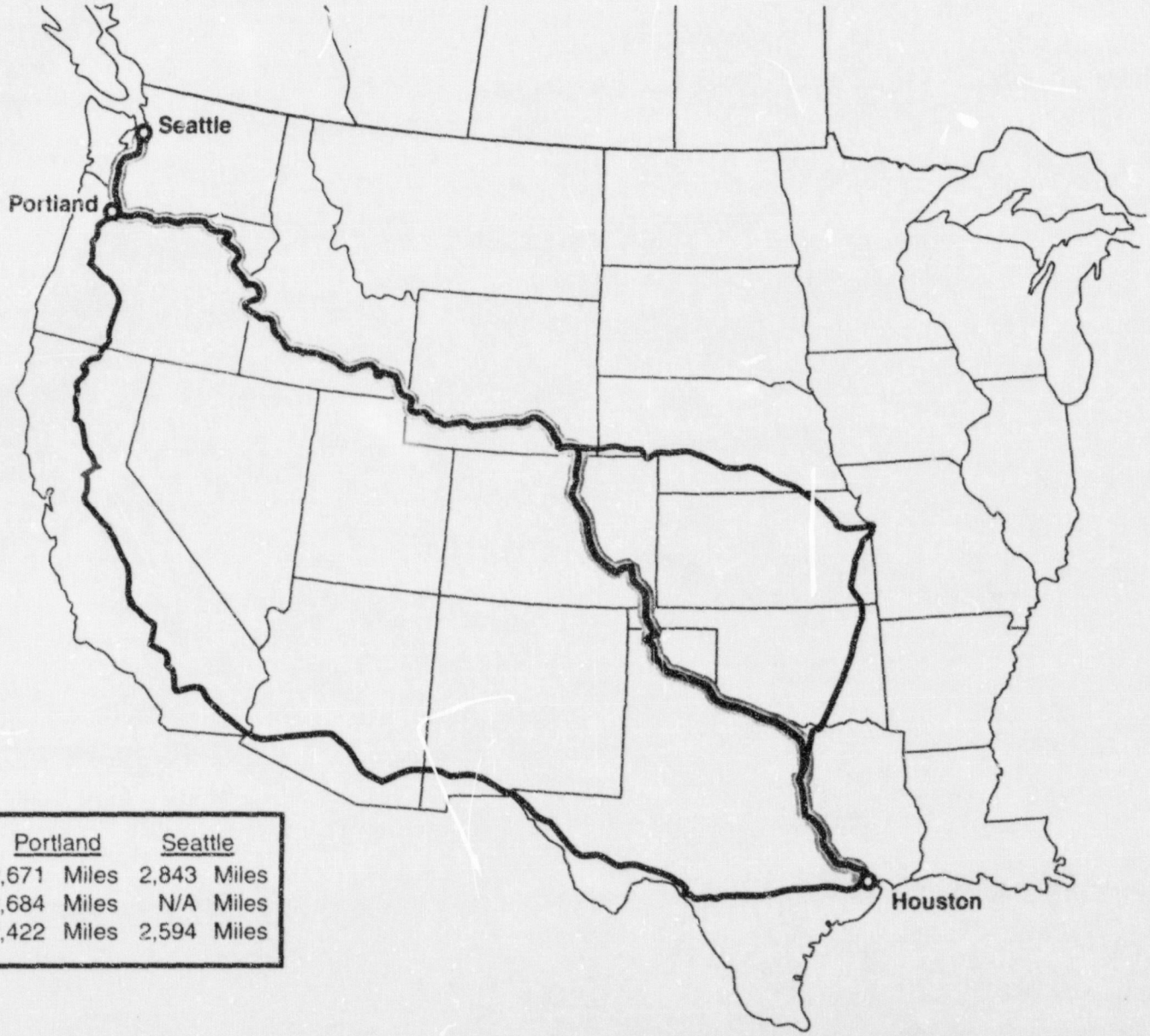
Before their recent consolidation, both BN and Santa Fe dropped intermodal service between Texas and Denver (though they have stated that they now intend to re-enter the market). In order to serve shippers who requested replacement

service, UP instituted a circuitous intermodal service from Texas to Denver and Utah via Kansas City, but these trains run only three or four times per week and cannot provide high quality service because of the lengthy route via Kansas City. After merger, UP/SP will operate a daily intermodal and manifest train between Dallas/Ft. Worth and Denver over the direct route through Amarillo, which will carry connecting traffic to and from Houston, New Orleans and other South Central points.

UP/SP will also inaugurate through manifest train service between Texas and the Pacific Northwest, providing direct competition to BN/Santa Fe. Westbound, this train will carry traffic from Louisiana and Texas through Denver to UP's Hinkle Yard near Pendleton, Oregon, which will send connecting trains to all Pacific Northwest destinations on UP/SP. The returning train will pick up soda ash shipments from Western Wyoming for delivery to Gulf ports, Mexican gateways and other South Central destinations. As the following map shows, this route will be much shorter than UP and SP alternative routes.

- ***Kansas City Bypass Routes***. In recent years, Kansas City has become the second busiest rail terminal in the United States, and UP is -- or was before BN/Santa Fe was created -- the biggest user of the terminal. Kansas City has become a major bottleneck for the UP system, because all traffic between the original UPRR and MPRR must pass through the terminal. This includes the river of coal flowing out of the Powder River Basin in Wyoming destined to Georgia, Missouri, Arkansas, Oklahoma, Louisiana and Texas.

Pacific Northwest–Houston



	Portland	Seattle
UP	2,671 Miles	2,843 Miles
SP	2,684 Miles	N/A Miles
UP/SP	2,422 Miles	2,594 Miles

Kansas City also can be a major source of delay for SP. SP's Armourdale Yard is often pressed to the limit for the volume of traffic it handles. SP trains using the BN route to Chicago must operate through Eustic Tower, an additional cause of delay in Kansas City. Terminal delay has sometimes been so severe as to require as much as eight hours to travel a few miles. SP trains leaving Armourdale for the West use UP's congested line to Topeka and suffer delay while waiting to be slotted into the incessant flow of UP traffic.

To reduce congestion in Kansas City and improve service, UP/SP will create a new route for coal and grain traffic to Texas via Topeka, Kansas. As shown on the following map, coal and grain trains approaching Kansas City from the northwest on UP's line from North Platte will turn south at Topeka onto SP's line to Herington. These trains, primarily coal trains from the Powder River Basin and grain trains from Nebraska and Kansas, will then use the former OKT line acquired by UP in its MKT acquisition. The OKT line must be upgraded to handle large volumes of heavy traffic, and we plan to spend more than $91 million to add and extend sidings, strengthen bridges, improve signals and improve track.

UP/SP will also reduce congestion in Kansas City by running traffic through the terminal without switching. For example, UP's Des Moines yard will create new trains for Parsons and Herington, Kansas, that do not set out or pick up in Kansas City. We will also operate our through manifest trains between the Pacific Northwest and Texas via Denver, taking additional traffic out of Kansas City.

Kansas City Bypass

UP/SP will operate approximately nine fewer trains per day on the busy Kansas City-Topeka segment.

- ***The Kansas Pacific Route***. Today, SP coal trains from Colorado and Utah mines to Midwest destinations travel east either via 10,221-foot Tennessee Pass or by running east via Denver, which involves two helper districts to Pueblo. From Pueblo, SP coal trains run east over UP trackage rights to Herington, Kansas, and then northeast toward Topeka. Much of the SP track on the Tennessee Pass line, like much of the trackage rights line east of Pueblo, is jointed rail which would have to be replaced in coming years at great cost.

  To handle this traffic more efficiently, UP/SP will upgrade the original Kansas Pacific mainline from Denver to Topeka via Salina, which was built shortly after the first transcontinental railroad. The "KP," as UP employees call it, offers the most direct route from Denver to Kansas City and St. Louis. This upgrading, which includes almost $50 million worth of new track, ten new 9,300-foot sidings and five siding extensions, will cost approximately $86.6 million. When it is finished, at least eight trains per day, including a pair of automotive trains between Denver and Kansas City, will use the route. The KP route will also be available as a relief route for UP's mainline via North Platte when it experiences congestion or heavy maintenance, permitting trains to run from Kansas City directly to Denver or the West Coast without passing through North Platte and allowing empty coal trains to be rerouted to the Powder River Basin via Topeka and Denver.

By upgrading this route, UP/SP will be able to abandon the scenic but operationally difficult rail line between Cañon City and Sage in Colorado, which public agencies could convert into perhaps the most remarkable recreational trail in America. (It passes through the bottom of the Royal Gorge and through several other remote canyons.) We have already received an expression of interest in this line from "rails-to-trails" interests. UP/SP will also be able to abandon substantial trackage in Colorado and Kansas, redeploying the value of those assets with very little, if any, impact on local shippers.

- ***Oklahoma City Service***. Today, only BN/Santa Fe, using the fast Santa Fe route between Kansas City and Texas, can provide expedited rail service between Oklahoma City and Kansas City, Chicago and beyond. UP's OKT line from Oklahoma City was once part of the Rock Island system to Kansas City and Chicago. SP operates the former Rock Island segment between Herington and Kansas City. By combining these routes that once comprised the Rock Island and upgrading the OKT, UP/SP will be able to provide competition for BN/Santa Fe via Wichita and Herington. This route, while not as fast as the BN/Santa Fe line, is expected to be sufficiently fast to support the service required by General Motors for automotive traffic to Kansas City and Chicago, and our new Oklahoma City-Kansas City train on that route will improve service for other carload traffic as well.

B. More Reliable Rail Service.

In a number of important ways, we expect the UP/SP consolidation to improve the reliability of rail service compared to the service experienced by UP and SP shippers

today. Our goal is to meet shippers' demands for predictability and time-definite delivery, described by Professor La Londe in his statement.

Separate testimony by Mr. King:

Frankly, this is not the most comfortable time for UP to talk about service quality. UP has a strong reputation for high quality service, but the reliability of its service declined measurably in recent months. We found ourselves short of power and crews, especially in the face of an extraordinary surge of grain traffic, and we learned that we may have been too aggressive in the way we absorbed CNW -- a lesson we will remember in connection with a UP/SP merger. Our customers have been complaining, as they should.

UP is not accustomed to falling short of its performance targets, and it is taking the problem very seriously. Part of my new job is to fix it -- fast. To relieve a power shortage, UP has leased every spare locomotive it can find from any source in the U.S. and Canada, and we are taking delivery of two or three new locomotives every day. We doubled our locomotive order for next year. We are also hiring large numbers of train crew members. We have reorganized our operating regions, returning experienced CNW officers who had been rotated to other parts of the UP system to CNW territory. And we have established a new organization, called Customer Service Planning and Delivery, to implement information systems and operating designs that will return UP service to the level our customers expect.

Separate testimony by Mr. Ongerth:

SP's inconsistent service problems have proven stubbornly difficult to repair. SP routes are well situated to serve major national traffic patterns. Linking the Sunbelt and

the West Coast, our lines have exciting growth prospects. SP cannot fully capitalize on this potential, though, because a number of our routes are at the capacity of our existing plant much of the time. This shortage of capacity limits our ability to move trains expeditiously and reliably through our system. For example, trains experience long waits in sidings for meets or passes because we do not have Centralized Traffic Control on some heavily used segments. We sometimes fleet our time-sensitive trains and hold opposing traffic, because a single-track line, such as the Golden State route from Kansas City to El Paso, cannot accommodate a crush of traffic in both directions at the same time. Our terminals, particularly key hubs at Houston, Roseville and Kansas City, sometimes experience congestion, forcing us to hold trains out of the terminals until the congestion can be cleared.

More often than we would like to see, our train crews "die" under the Hours of Service Act, delaying their trains and causing further delays and costs as new crews must be called and transported to the trains. Unanticipated extensions of transit times further disrupt the cycling of locomotives and cars, resulting in additional delays. Because of delays like these, SP incurs increased equipment rental costs. Less obvious but also troubling is the fact that, when we make major capital investments, as we have in locomotives during the last two years, our investments sometimes do not serve us optimally because the capital asset -- in this case, locomotives -- cannot be used with optimum efficiency, given delays induced by other factors. We have a service level that fails to match that of our competitors, BN/Santa Fe and UP. We are a higher cost railroad forced to compete in an increasingly cost-sensitive and competitive environment.

Joint testimony:

1. Operating Control Systems. One of SP's weaknesses is that it lacks the technological capability to manage operations on its route network as the other major railroads do. UP manages its entire railroad with a system called TCS, or Transportation Control System. TCS provides a comprehensive framework and support system for UP operations. It contains UP's systemwide transportation plan, as well as operating plans for each train, which guide the activities of terminal supervisors and yardmasters who create and operate trains. It creates a service plan for every shipment on the entire UP network, assigning each car to appropriate scheduled trains and expected connections from origin to destination. It monitors car movements, providing information for UP operations planners. And it is also the source of information for UP's car accounting, statistical reporting and revenue accounting systems. TCS is integrated with a number of other computer applications that, for example, allow yardmasters to control their yards, operating officers to place helpers at the proper locations in trains, and shippers to keep track of the progress of their shipments.

By comparison, SP -- which was once a pioneer in operating systems technology -- is operating an older computer system that provides few of the aids to field operations available through TCS. SP wants to operate a scheduled railroad system, but it lacks the computer capability to do it well. SP's data system monitors where cars are, but it does not direct them to the right train at the right time. For cost-saving reasons, SP outsourced its data processing requirements to an independent contractor which demonstrated a slower-than-expected learning curve for the railroad's needs and operations.

With some qualifications, discussed below, the merger teams found that UP technology was superior to that of SP. Under the principle of selecting the best of both companies to serve the unified company, the system's operations support technology will be that of UP. UP/SP will implement TCS across the SP system. Operating officers, yard-masters and train dispatchers on SP will learn an entirely new way of doing business. That will not be easy. But it is essential if SP routes are to participate fully in the world of modern railroading and provide consistently reliable service. Most of the benefits will affect operating functions and may not be apparent to shippers, but they will leave their mark in effective cost reductions. Others will be very apparent to SP shippers, who will have, in addition to much faster transit times and better car supply, improved car distribution, expanded customer service functions and better car location data.

In addition, UP/SP will terminate SP's computer and information system outsourcing arrangement so that we can bring information services for the entire railroad under one roof. These changes will give UP/SP the technical support to create the operating discipline that SP's President has said is the company's most pressing need.

UP's freight claims procedures and loss and damage prevention efforts have been significantly more successful than SP's, with the result that UP's loss ratios (i.e., losses stated as a percentage of revenues) approach those of the trucking industry. Although SP recently has experienced substantial improvement in safety-related accidents and losses, it is still behind UP in this area. UP's superior record of freight claim handling results from UP's practices of dealing with damage incidents within the context of the whole transportation transaction -- interfacing with most critical UP system data bases, providing

analytical data for damage prevention, and organizing claims handling by commodity groups, with specialists covering each group and developing damage prevention efforts. On the other hand, SP's freight claim processing is currently a limited-budget, stand-alone process using contract services, which lacks the capability of supporting the same level of prevention effort. The merger will make UP's system available for the benefit of SP's shippers, without the need to commit SP's scarce capital resources to an expensive upgrade of its own system.

There are also areas where SP will be able to contribute its unique experience. An example is train makeup -- the distribution of cars of differing types, weights, and lengths within a train. This is an important matter for trains that operate in undulating or curving mountain-grade territory. Grades, curves, braking and locomotives pulling hard at low speeds all create longitudinal and/or lateral in-train forces which can create the risk of derailment if the train is not properly controlled. SP has had a team, supported by retained engineering consultants, studying these issues since 1991 in an ongoing effort to make the management of trains safer. They have developed pilot computer-based programs for the automatic exception reporting of sensitive trains, capable of providing a "no-go" warning for trains whose makeup suggests elevated risk. Concurrently, UP has had teams working with broader train makeup issues as part of an advanced computer-based yard management program, now under test at UP's Hinkle Yard. The SP sensitive-train program can dovetail with the broader program at UP, and we are thus at the threshold of creating what can be the world's most advanced system of train makeup monitoring for safety in mountainous terrain.

Although we will not be able to implement these train makeup improvements immediately upon consummation of the merger, joint development can proceed immediately after the merger. We have not attributed any specific dollar value to these improvements, but we nevertheless see them as providing important merger benefits, as they will significantly increase the safety of UP/SP rail operations. This is important to shippers -- and especially to shippers of hazardous materials -- because any major derailment and spill of hazardous materials can not only bring lawsuits against the railroad, but also drag the shipper into litigation and create negative publicity -- consequences that shippers sensibly wish to avoid.

A more striking technological development may lie just over the horizon. In cooperation with the Federal Railroad Administration and BN, UP has been working to solve the daunting technical problems associated with Positive Train Separation, or "PTS." Using ground-based stations or the Global Positioning Satellite system, PTS computers will monitor the exact position of every train to within a few feet. If successful, PTS should be able to stop trains in time to prevent collisions. PTS would also automatically advise the crews of opposing trains to adjust their speeds so that the trains will meet at sidings without stopping, saving large quantities of fuel and improving service. If PTS becomes feasible, it will present a major financial challenge to all railroads, but especially to a railroad with limited access to capital.

2. Route Efficiency, Separation and Flexibility. The entire railroad industry has been struggling with the effects of growing traffic and resulting congestion. UP and SP have not been spared. SP's Sunset Route is at or above capacity, with up to 40 trains in

a day on a largely single-track railroad. UP is adding capacity to its Central Corridor line at a rapid pace, but 100 to 120 trains per day are common on its lines in Central Nebraska. Part of the problem facing both of our railroads is that some of the traffic on our congested lines could move over more efficient routes. For example, due to slow speeds and limited clearances, SP runs intermodal traffic between Chicago and Northern California via El Paso and Los Angeles, taking it hundreds of extra miles and adding more trains to the already congested Sunset Route. UP transports manifest traffic from Tennessee, Louisiana and Texas to California via Kansas City, and North Platte, crowding its Central Corridor line, creating congestion in Kansas City and consuming fuel and time on a circuitous route. With highly efficient routes in virtually every major corridor, BN/Santa Fe does not face these problems that SP and UP separately face today.

Together, UP and SP will be able to use the most efficient routes throughout our combined system. The Sunset Route will carry traffic between New Orleans, Houston, Laredo and California. The T&P route will handle trains between Memphis and North Texas and California. From Kansas City and St. Louis to Los Angeles, we will use SP's Tucumcari Route. Traffic between Chicago and Northern California will be handled via UP's Overland Route. Oregon lumber traffic for the Midwest and East will be rerouted over UP's more direct route through Hinkle Yard and Pocatello. These reroutes will save large amounts of time for our shippers and make scarce capacity available without capital investment.

Where possible, we will also specialize the functions of our routes to make them even more efficient. We described earlier the route specialization in the Mid-Continent

Corridor, where SP lines will carry primarily southbound traffic and northbound traffic will be routed mainly over UP. We will specialize the functions of our Chicago-Southern California routes as well, routing carload traffic via North Platte in order to take advantage of its hump-yard capabilities and focusing expedited traffic on the Tucumcari Line.

The Operating Plan reflects the routings we expect to use on a regular basis, given what we know today, but one of the advantages of a UP/SP merger for shippers and railroaders alike is that we will enjoy the flexibility to use alternative routes whenever necessary. If one route becomes too congested, we can reroute traffic to another. If we have a major line disruption on the MPRR line through Little Rock, for example, we will be able to maintain service over the SSW line through Pine Bluff. This capability depends, of course, on flexible train crew agreements, which are discussed in the Operating Plan.

Route flexibility is especially important for track maintenance. The availability of alternate routes will make it possible to conduct maintenance of way work more efficiently, since traffic may be rerouted to allow maintenance work to go forward without interruption. SP's present lack of flexibility, for example on the single-track between El Paso and San Antonio, causes inefficiency both in train movements and in maintenance of way work. Trains that cannot use a parallel double track or an alternative route must be held up to give the maintenance crews a "window" in which to perform their work, yet the crews must periodically interrupt their work and put the track back together because trains on such a busy route cannot be held up for an entire workday. The availability of alternative UP routes will make it possible to keep crews working over much longer windows, and even

for entire workdays.[1/] Although we have not attempted to quantify the benefits associated with these improved maintenance opportunities, the improved productivity and efficiency will be extremely valuable.

3. Improved Transit Times on SP. The UP/SP consolidation will bring the benefits of UP capital investment, maintenance standards, equipment, operating discipline and technology to SP shippers. As a result, we expect SP service to improve markedly. This improvement will benefit shippers, equipment owners and the railroad industry as a whole.

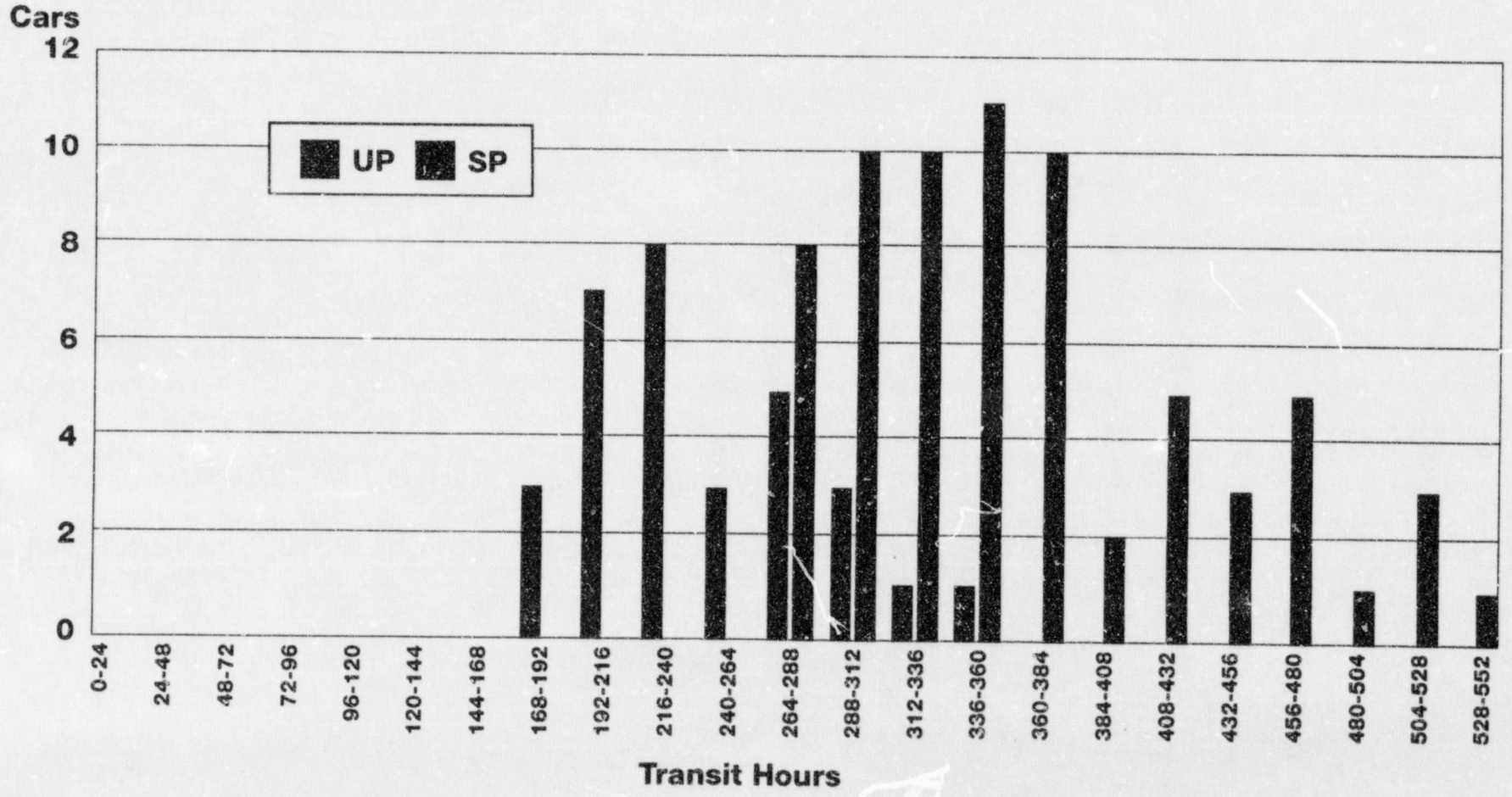
To measure this improvement, we evaluated actual UP and SP transit times during July, 1995 on a few corridors where the carriers compete. UP transit times were generally shorter than SP transit times between the same points, as illustrated by the attached charts. We observed the same pattern when we looked at car cycle times (the time from one loading to the next in the same car), which showed that SP car cycles usually are many days longer than UP car cycles. Second, and equally important, the range of transit times for SP service was usually greater than the range of transit times for UP service. In other words, UP service appeared to be more consistent. Shippers will not be surprised by this information, and the numbers bear out their individual experiences as reported in their verified statements.

[1/] Lines that can be used for reroutes to accommodate maintenance of way work include, to name only a few, UP and SP routes in the Los Angles Basin and the San Francisco Bay Area; UP and SP lines between Sacramento and Utah; the UP and SP lines between Houston and New Orleans; and the UP and SP lines between Dallas and El Paso.

Northern California to Memphis

Manifest Shipment Transit Time

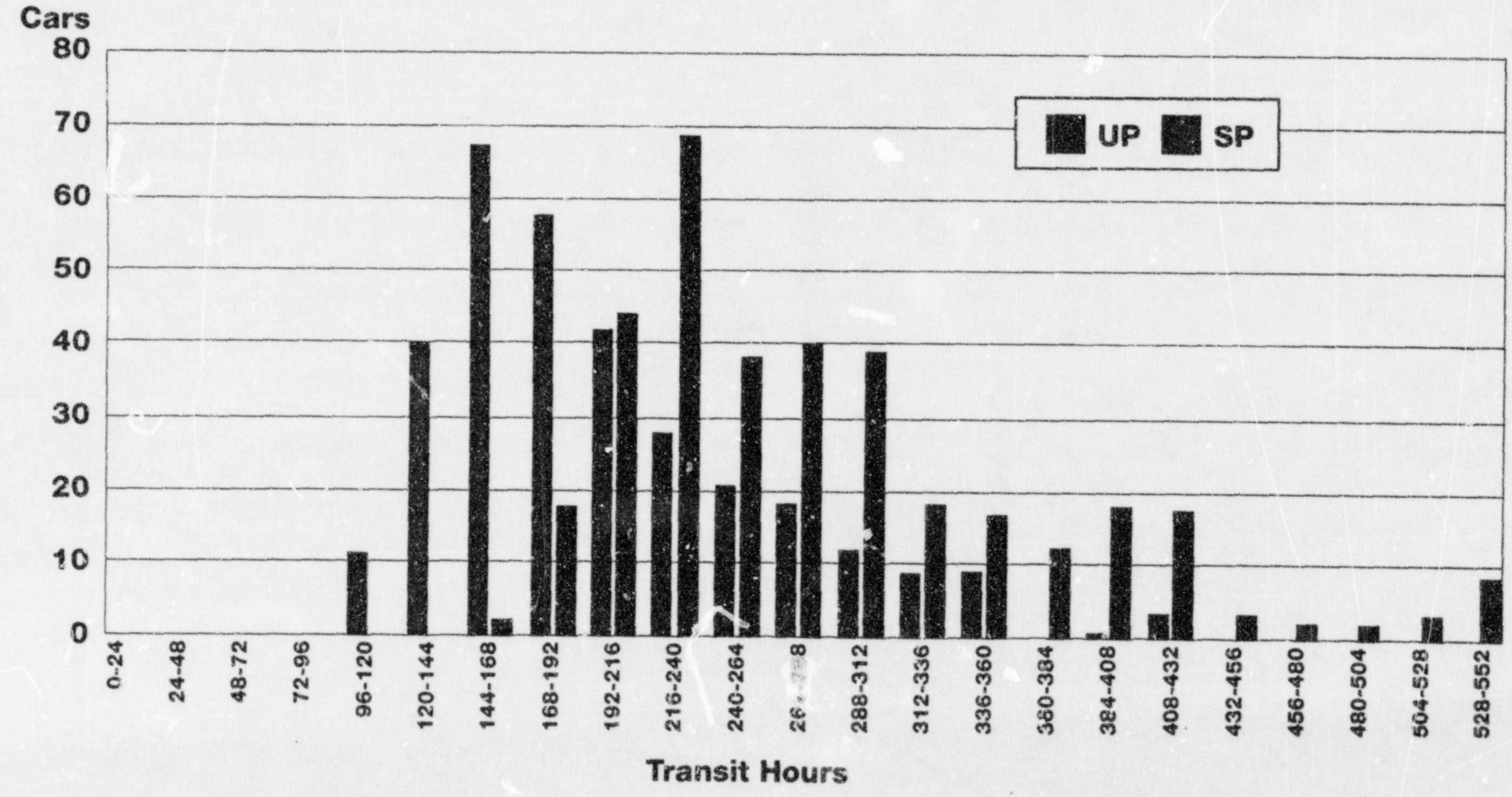
July 1995



St. Louis to Northern California

Manifest Shipment Transit Time

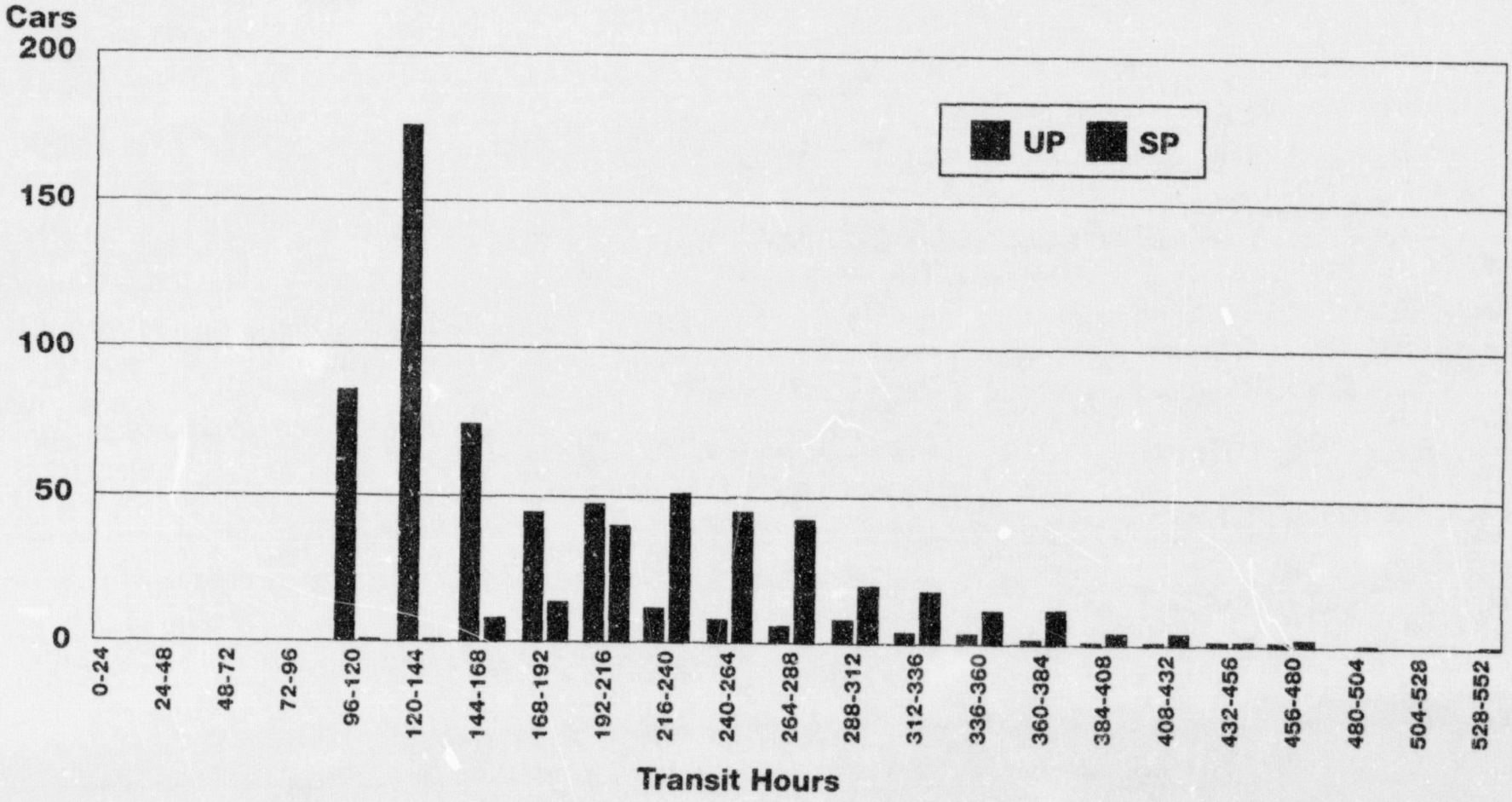
July 1995



St. Louis to Southern California

Manifest Shipment Transit Time

July 1995



We developed an indication of the benefits this improvement would have for shippers by comparing the programmed SP manifest train schedules included in our 1995 baseline, together with related blocking and connections, with post-merger UP/SP manifest train schedules, blocking and connections. Two points should be emphasized: First, we compared only SP's programmed schedules, not its actual train performance. Second, the UP/SP Operating Plan is based on realistic assumptions and conditions, including a very conservative assumption that UP/SP freight yards would process cars no faster than they do today (ignoring improvements in terminal operations identified in the Operating Plan). Third, we generally did not fine-tune the UP/SP Operating Plan to improve the model's train connections as we would in the real world. As a result, connecting service shown in the Operating Plan may be slower than it will be in reality.

On the basis of this conservative comparison, shippers of manifest traffic on SP can expect average improvements in total transit time of the magnitudes shown below. These improvements result from a combination of shorter routes, better blocking, faster trains and capacity increases:

Portland to Chicago:	*3 days, 22 hours*
Portland to City of Industry (L.A.):	*2 days, 19 hours*
Portland to Houston:	*4 days, 10 hours*
Portland to St. Louis:	*3 days, 10 hours*
Oakland to Chicago:	*2 days, 22 hours*
Oakland to Ft.Worth:	*2 days, 5 hours*
Oakland to St. Louis:	*1 day, 10 hours*

Los Angeles to Memphis:	*2 days, 10 hours*
Los Angeles to Ft. Worth:	*3 days, 5 hours*
Chicago to Houston:	*1 day, 14 hours*
Ft. Worth to Chicago:	*1 day, 16 hours*

This list does not purport to be inclusive, but only indicative, using major manifest traffic flows as examplars. One can find exceptions to the pattern, where schedule time will be about the same, or, occasionally, where a point-to-point run today is faster than a UP/SP system connection based on a different operating assumption, but overall the pattern of improved transit times is consistent. In addition, since SP's current service standards are not presently being maintained with the desired degree of integrity, the observed improvement from the SP shipper's standpoint should be greater than the time reductions set forth above.

4. Reliable Trackage Rights Operations. UP/SP and BN/Santa Fe will conduct extensive operations over each other's lines. BN/Santa Fe will operate more than 6,000 miles of trackage rights over UP/SP on a number of line segments, including Denver-Stockton, Mojave-Kern Junction, Houston-Memphis, Houston-Iowa Junction and in several areas of Texas. UP/SP will operate some 4,200 miles of trackage rights over BN/Santa Fe on numerous segments, including Chicago-Kansas City using two routes, Kansas City-Hutchinson, Ft. Worth-Denver, Daggett-Riverside (UP/SP's mainline from Utah to Los Angeles), Portland-Tacoma (UP/SP's mainline to Seattle), and New Orleans to Iowa Jct., Louisiana (UP/SP's intermodal route to New Orleans). As a result, UP/SP and BN/Santa

Fe will be aggressive competitors who are also directly dependent on each other at the operating level.

UP/SP will work with BN/Santa Fe to ensure that trains of both railroads receive proper handling on all trackage rights segments. As the lead witnesses in last year's dispute between UP and SP over trackage rights operations, the two of us and our companies learned a great deal about what makes trackage rights operations work. Most importantly, we learned that effective trackage rights operations require management involvement on the part of both companies. The landlord's management must effectively instruct dispatching forces of their obligation to provide equal treatment to tenant trains. The tenant's management must supply the landlord with accurate and current information about tenant operating plans and play an active role in overseeing trackage rights operations. We drew upon those conclusions in planning UP/SP trackage rights operations.

UP/SP will create a separate service unit, equivalent in stature to its other service units, under the direction of a Superintendent whose primary responsibility will be to administer trackage rights operations on BN/Santa Fe lines. UP/SP will have the ability to provide electronic exchange of trackage rights train schedules, service priorities and operating data with BN/Santa Fe so that BN/Santa Fe understands our operating requirements and vice versa. We will make personnel available to provide all information BN/Santa Fe needs. Some time ago, UP and Santa Fe exchanged computer terminals so that they could monitor trackage rights operations on each other's lines, and UP/SP will expand those arrangements.

We encourage BN/Santa Fe to take similar steps to help us handle their trains efficiently. BN/Santa Fe has, and will continue to develop, the technological capabilities, management personnel, and financial resources needed to support trackage rights operations in a manner that SP was unable to afford. UP has found that Santa Fe is very effective in administering its trackage rights operations over UP between Ft. Worth and Sweetwater, Texas, and we expect BN/Santa Fe to be just as actively involved in managing its operations over UP/SP.

C. Improved Terminal Facilities.

The Operating Plan provides a detailed description of every significant terminal and common point affected by the UP/SP merger. It describes existing facilities and operations and explains how UP/SP will improve transportation service and efficiency.

Those plans differ depending on the needs of shippers at each location. In a number of cases, capacity is ample and the functions of a particular yard -- SP or UP -- are so closely duplicated by those of the other that one yard can simply be closed and its functions absorbed by its counterpart. In other cases, one yard, with limited improvements, can be made to serve the combined territory of two. In yet other cases, the growth of industry in an area has been such that the combined capacity of both yards should be preserved to give the company "breathing room" for the future, but the functions of the two can be reallocated to make best use of the total capacity. For example, efficiencies may be achieved by consolidating intermodal traffic at one yard and routing carload traffic through the other. Where none of these solutions is adequate, UP/SP will

construct a number of new facilities and expand others. In the following pages, we highlight the many benefits resulting from new and improved terminal operations.

1. Elimination of Interchange Delays. UP/SP will be able to improve service at virtually every common point by eliminating interchange delays between our two railroads. As separate systems, UP and SP interchange more than 305,000 loaded cars per year across the western two-thirds of the country. Almost every one of these cars is delayed as a result of the interchange process. The UP/SP merger will eliminate most of those delays.

Here is a simple but realistic example of how normal interchange causes unavoidable and expensive delay. Our example is a shipment from Des Moines to San Jose, California, interchanged from UP to SP at Stockton, a common interchange point. Our hypothetical car is shipped on December 1. It arrives at Stockton on UP train NPST at 4:40 pm on December 5. The train is switched at about midnight by a UP switch engine. Cars destined for industries served by UP are put in tracks to be picked up later by UP switch engines or local trains. Cars to be interchanged to SP are put in another track with other traffic destined to SP. On the morning of December 6, a UP yard engine makes the daily delivery of cars for SP to the SP yard. (Formal interchanges like this also involve a number of time-consuming related tasks, including inspection of cars for damage and functionality, maintenance of accounting records to reflect the time and place of interchange for allocation of car hire responsibility, and in most cases an FRA-mandated air brake test.)

Once the car moves to the SP yard, it is treated like any other new arrival. By late afternoon, all the cars from UP are switched into various tracks at the SP yard, depending on their destinations. Since our hypothetical car is en route to San Jose, it is switched into a track with traffic destined for SP's yard at Warm Springs, California. On the morning of December 7, an SP train picks up the car and takes it to Warm Springs, where a local freight moves it to San Jose.[2/]

Although nothing went wrong and our hypothetical shipment was handled properly by both carriers, it spent most of two days in Stockton. This pattern is repeated almost 1,000 times per day across the UP and SP systems for traffic interchanged between two railroads. In fact, according to actual 1994 data, the average car time in terminals for each interchange between UP and SP was over 60 hours. This is the measure of delay associated with UP/SP interchanges. Avoiding such delays is one of the reasons shippers prefer single-line service.

After consolidation, interchanges between UP and SP will be eliminated. In the example, our hypothetical car would arrive in Roseville on train NPRV(1) at 2:25 p.m. on December 5. The car would be classified into a Warm Springs block and depart Roseville at 1:00 a.m. on December 6, arriving in Warm Springs at 7:45 a.m. on December 6, saving 24 hours.

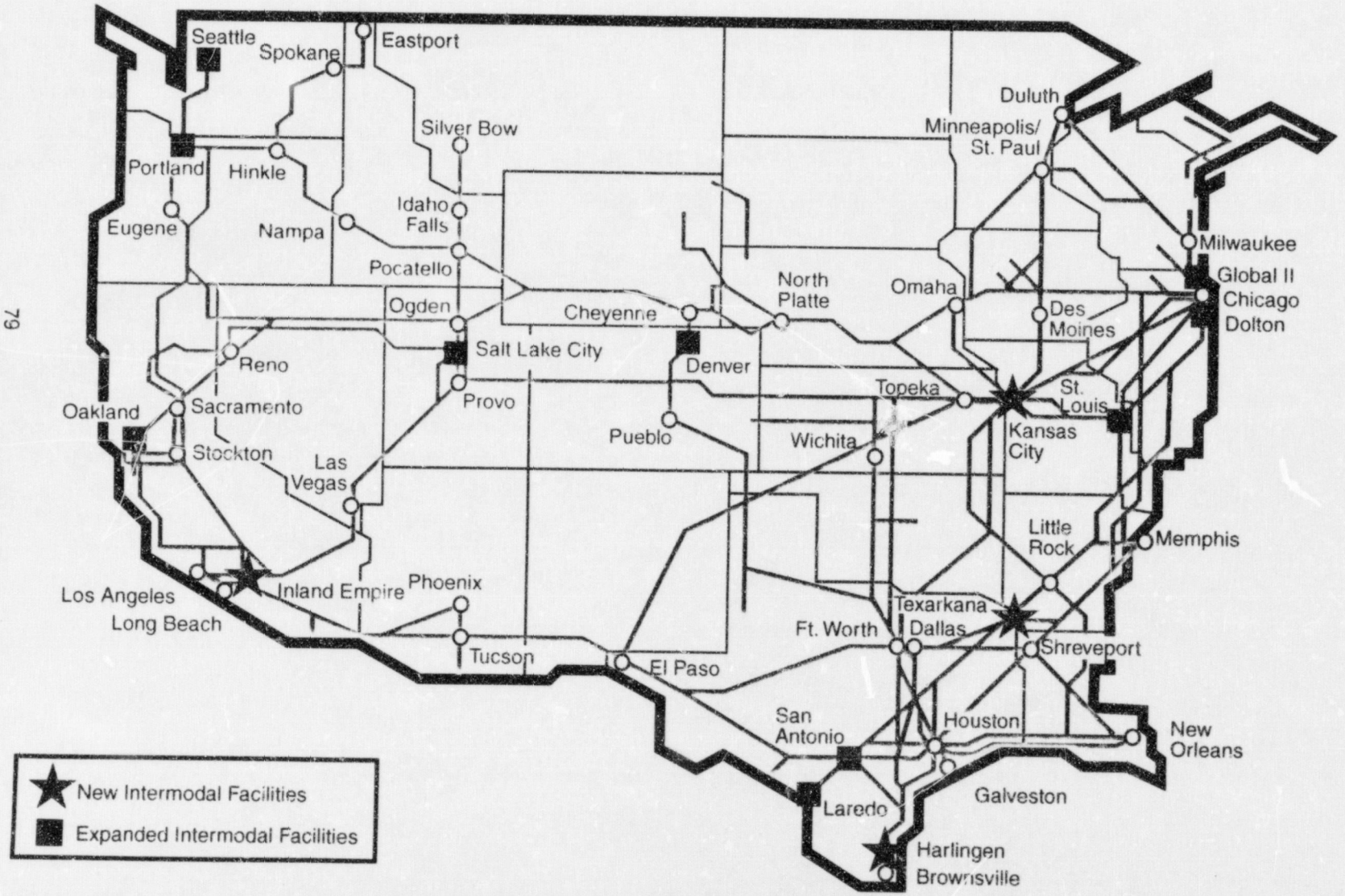
[2/] In the interest of presenting a reasonable example, we simplified the current handling of the sample car. In reality, under today's SP transportation plan, the car would be handled from Stockton to Roseville and then to Warm Springs on two trains, requiring three more days in transit.

Eliminating interchanges such as this example will save hundreds of thousands of car delays every year. Based on our very conservative opinion that UP/SP can save 24 hours out of the average of 60 hours we spend interchanging the average car, the railroad industry will save $5.7 million worth of car time for reduced UP/SP interchanges. These savings are for railroad-owned cars only. Further savings will accrue to shippers and other owners of private rail cars, which also will be handled more efficiently.

2. Intermodal Terminal Improvements. An important advantage of a UP/SP merger is that the new system will have both the financial resources and the traffic potential to construct or expand intermodal facilities at a number of locations. The new and expanded intermodal facilities are shown on the following map. At other locations, UP/SP will assign specialized functions to existing intermodal ramps or combine UP/SP service at one facility or the other. UP/SP will organize the presently dispersed collection of eight Chicago-area terminals and four Southern California intermodal terminals, by handling traffic at the most efficient and desirable ramps.

UP/SP will construct a modern, $67.5-million intermodal facility in the eastern Los Angeles Basin area known as the "Inland Empire." We have not yet identified a precise location for this facility, and completion will take time because of the lengthy environmental approval and permitting process in the area, but such a new facility is essential if UP/SP is to compete with BN/Santa Fe and its bustling San Bernardino terminal for Southern California intermodal business. This is the growth area in the Los Angeles Basin, and the less-than-truckload motor carriers prefer to use Inland Empire locations as distribution

Intermodal Facility Improvements



centers. SP operates a modest intermodal terminal at City of Industry, but this is too far west to serve the Inland Empire efficiently.

UP/SP will also build a new intermodal facility in Kansas City, occupying part of SP's Armourdale Yard. Strategically located near I-70, this $16.7 million, 250,000-lift-per-year facility will replace both the small SP ramp at Armourdale and UP's ramp at Neff Yard, both of which have capacity constraints. It will support UP/SP's much more ambitious participation in the Kansas City-Southern California intermodal business. New, although smaller, intermodal yards will be constructed at Harlingen, Texas, serving the lower Rio Grande Valley and the Mexican border crossing at Brownsville, and at Texarkana. The Texarkana facility, located at a rail junction with frequent service north and south, will replace intermodal ramps at Shreveport, Louisiana, and Marshall, Texas, that will be located on lines with service predominantly in one direction as a result of the directional operations described earlier.

Before the UP/SP merger was announced, UP and SP were already exploring the possibility of contracting with an operator to build and operate a joint intermodal terminal across the Mississippi River from Memphis, possibly in conjunction with NS. This proposal was sufficiently advanced that we concluded we ought not treat the intermodal facility as a benefit of the merger. The new terminal definitely will be built if UP and SP merge, and it definitely will benefit UP/SP customers. This facility will allow UP to close its overtaxed intermodal yard in Memphis, and will allow SP to escape its equally taxed, poorly located intermodal facility in Memphis.

In addition to new facilities, UP/SP will invest more than $150 million to expand parking, lift and gate capacity at a number of major intermodal terminals throughout the system. One of the more ambitious projects will be at Portland, Oregon, where we expect substantial intermodal traffic growth as a result of improved service on the I-5 Corridor and removal of clearance restrictions in the Oregon mountains. We expect this growth even though many of the intermodal shipments loaded and unloaded today in Portland will move by rail to and from Seattle. In order to accommodate new business, the present UP facility in Seattle will also be expanded.

The UP Dupo intermodal terminal in the St. Louis area will be expanded to accommodate growth and shipments transferred from SP's small and outdated Valley Jct. Yard. We will increase Dupo's capacity not only by physical expansion but also by converting it from side loading of trailers and containers to a more efficient overhead crane loading operation. As the map indicates, we will also expand intermodal facilities at Salt Lake City, Laredo, Denver, San Antonio and Oakland. At Oakland, the former WP intermodal terminal is adjacent to the SP terminal; these two facilities will be integrated as well as expanded, with the WP terminal used primarily for American President Lines container shipments.

The UP/SP merger will bring together the excellent intermodal facilities in Chicago created by CNW and UP with Southern California's premier facility, SP's Intermodal Container Transfer Facility ("ICTF") in Long Beach. In Chicago, SP's intermodal operations are dispersed among four facilities, all on the property of other railroads. Shipments to and from Texas, Louisiana, Arkansas and Mexico will be consolidated in

UP's Dolton facility, which will be expanded to accommodate 250,000 annual lifts. Conventional intermodal traffic to and from the West and Southwest will operate to and from the Canal Street terminal on the west side of Chicago's Loop. UP's large Global-2 intermodal facility will be expanded by a third and, along with Global-1, will handle doublestack traffic to and from the same areas. UP/SP will discontinue using one of two IC facilities, as well as a CSX yard at Forest Hill, distributing that traffic among the UP facilities. UP/SP will continue to use a second IC facility until it develops sufficient capacity at Dolton.

In Los Angeles, we will proceed gradually because of the time required to open the Inland Empire facility and complete a new $27 million expansion at ICTF. As these projects are finished, and as an increasing number of steamship containers come to be loaded and unloaded at on-dock facilities, UP/SP will close the less efficient SP Los Angeles Transportation Center ("LATC") intermodal facility (releasing real estate near downtown Los Angeles worth some $65 million) and move many of those functions to UP's East Los Angeles Yard. When we are finished, UP/SP will have the most modern intermodal facilities in the Basin, although we expect BN/Santa Fe to challenge us with its own initiatives.

3. Manifest Terminal and Yard Improvements. Today SP and UP both operate terminals, either in the same city or nearby and serving common territory, at more than 40 points. In some cases the terminals serve virtually identical geographical regions; in all cases there is broad functional overlap between the two facilities. First there are the major terminal yards, such as SP's North Yard and UP's 36th Street Yard in Denver. Next are

what were once considered satellite yards, but will now become small regional yards in their own right, such as SP's Strang Yard at Houston and City of Industry Yard in Southern California. Finally, there are many smaller yards serving local industries, such as SP's Dolores and J Yards and UP's Montclair and Mead Yards in Los Angeles.

In every jointly-served location, UP/SP will combine or coordinate functions of the two carriers' primary freight yards. UP/SP will consolidate manifest operations into SP's North Yard in Denver; SP's Roper Yard in Salt Lake City; UP's Barnes Yard in Portland; UP's Neff Yard in Kansas City; the A&S Gateway Yard in St. Louis; UP's yards in Stockton, Memphis, Texarkana, Elko, Shreveport, Topeka and the New Orleans area; SP's yards in Beaumont, Lake Charles, Oakland, El Paso, Dallas and Reno; and, finally, UP's yards in Ft. Worth, Waco, Brownsville and Harlingen in Texas. At all these locations, the combined traffic of the two carriers can be switched more efficiently in one yard than in two. Interchange movements will be eliminated. In many cases, service can be improved in other ways, as in Dallas, where UP local industry traffic will no longer travel 35 miles west to UP's Centennial Yard, only to move back east on a train. SP's yard in Dallas will build a block for direct movement to North Little Rock, saving at least a day in transit.

In some terminals, neither freight yard will accommodate all UP/SP traffic, so both major yards will remain in use, each playing a tailored role. In Houston, SP's Englewood Yard will be dedicated to handling east-west business, while UP's Settegast Yard will specialize in north-south traffic and supporting local industries. The carriers' San Antonio yards will divide terminal tasks, with SP's yards handling BN/Santa Fe traffic and industry support while UP's SoSan yard will be dedicated to Mexico trade. SP's New Yard at

Avondale, Louisiana, will also have a new role as BN/Santa Fe's yard for the New Orleans terminal. SP's Old Yard will be available for potential development of a new intermodal facility should this become necessary.

As we have already indicated, UP/SP will make a number of changes in Chicago terminal operations. First, we will take some traffic out of Chicago yards altogether by improving run-through service to and from eastern connections. Second, we will concentrate manifest traffic for CSX and GTW, as well as smaller carriers, at BRC's Clearing Yard. This will allow us to reduce manifest freight classification work at Proviso and devote part of that yard to expanded intermodal operations. Finally, north-south traffic will be concentrated at UP's Yard Center facility on the south side of Chicago.

Terminal operations in the Los Angeles Basin will be comprehensively reworked. SP's West Colton hump yard will be primarily responsible for building blocks of traffic leaving or passing through the Basin, while SP's City of Industry Yard will be responsible for receiving inbound traffic for local shippers and providing industry support. This coordination will allow us to eliminate a great deal of classification work performed northeast of Los Angeles at UP's Yermo Yard on the Mojave Desert, freeing track space for staging export coal trains. With these steps, UP/SP will be able to close the SP "J Yard," combine UP and SP switching yards at City of Industry, and consolidate industrial switching at Kaiser, Mira Loma, Riverside, Arlington and Montclair. Aided by a variety of connections discussed in the Operating Plan, UP/SP will simplify the many "hauler" operations that move groups of cars between the larger yards and the support yards.

4. SIT Facilities. Shippers of chemicals, plastics and other commodities often require Storage In Transit ("SIT") of shipments awaiting delivery to their consignees. The largest SP and UP SIT facilities are SP's yard at Dayton, Texas, with a capacity of about 3,000 cars, and UP's Spring, Texas, yard which can store over 1,500 cars. Both facilities will remain in service. In St. Louis, SP's Valley Yard, adjacent to the A&S Gateway Yard, will become a SIT facility operated by A&S. Cars released from Valley Yard can be switched directly into outbound trains at Gateway Yard. Other than at Dayton, SP has little SIT space along the Gulf Coast, while UP has more than a half dozen SIT yards. SP shippers will benefit from coordinated use of all UP and SP facilities, permitting cars to be stored at the locations most appropriate for their needs. In addition, UP's Amelia Yard near Beaumont, Texas, will be converted to a SIT facility.

D. Equipment Availability and Utilization

UP provides its shippers with substantially better access to equipment than has SP in recent years. In fact, SP has given up business and short-hauled itself because it cannot supply all the cars shippers want. The UP/SP merger will offer the combined UP and CNW car fleets to SP shippers. In addition, the car fleets of the combined carriers will be effectively expanded as a result of equipment utilization efficiencies.

UP's experience in acquiring MPRR, WP, MKT and CNW over the last fifteen years shows that, when it comes to locomotives and cars, railroad consolidations permit one plus one to equal more than two. As a combined system, two railroads immediately eliminate a range of practices that for decades have caused the nation's rail system to underutilize these expensive assets. For example, consolidation eliminates the incentives

for individual railroads to get empty cars off-line quickly, instead of using them with consequent risk to their separate car hire balances. Today, an integrated rail system also can continually take account of information about car availability and demand for cars across the entire system, applying new intelligent technology to predict future equipment demand and direct empty cars to the most likely loading areas. Separate railroads do not do that jointly.

1. Matching Seasonal Utilization Patterns. UP and SP studied utilization patterns for the UP and SP systems. As is generally the case, we found that periods of sustained heavy demand, for which railroads generally attempt to size their fleets, differ on the two railroads for some car types. As a single system, UP and SP can share their equipment to meet the same level of demand with fewer cars, or increased demand without buying new cars. At market lease rates for the affected car types, this translates into additional car capacity worth about $12.7 million annually.

2. Eliminating Cross-Hauls. For decades, experts have recognized that separate railroads use cars inefficiently because they move equally serviceable empty cars in opposite directions in order to satisfy the Car Service Rules, comply with Car Service Directives and reduce car hire payments. Rail consolidations eliminate these practices. Our staffs calculated that the reduced cost of cross-hauling empty cars would save UP/SP some $11 million annually. We were unable to prove to our satisfaction that all of these savings are independent of other efficiencies measured in the Operating Plan. To be conservative, we did not include this benefit in the calculation of public benefits attributable to the merger.

3. More Efficient Operations. We explained earlier that the routing, network and operating efficiencies associated with the UP/SP Operating Plan would reduce annual operating expenses for existing traffic by not less than $70 million. A substantial component of this savings is attributable to reduced car time. UP/SP will eliminate more than one million car days from the transit time needed to handle their 1994 traffic (and this measure assumes that SP operated with 100 percent reliability in 1994). Translated, this is equivalent to almost 3,000 additional freight cars.

E. Customer Service Centers

Historically, railroads related to their customers primarily through local freight agents in each town and city. Today, most large railroads operate national customer service centers staffed with customer representatives with specialized knowledge of each customer's line of business and access to an array of information. UP's National Customer Service Center ("NCSC") is in St. Louis, supplemented by an International Customer Service Center in Laredo. SP recently established a National Customer Service Center in Denver. It also has regional offices in Los Angeles and Houston.

UP's NCSC handles not only the customer contacts, but also important operating functions such as train and interchange reporting. On SP, those functions are still carried out by local clerical personnel throughout the system. UP's NCSC also uses a system called ATCS, which allows the customer service representative to make direct computer contact with train crews across the UP system. When a customer reports to the NCSC that a car is loaded and ready to go, the NCSC representative, using ATCS, can instantly

authorize an approaching train to stop and pick up the car. SP does not have this time-sensitive capability.

The UP and SP customer service functions will be combined, although the location has not yet been determined. When we studied the efficiency of these operations, we learned that the UP's NCSC is considerably more efficient in handling calls than SP's, probably because of better computer support. UP information support systems will be used. We expect this consolidation to save UP/SP roughly $28 million annually, while improving our responsiveness to our customers' needs.

IV. Operating Efficiencies of a UP/SP Merger

A. Centralized Functions

One of our planning teams studied a variety of operating activities administered on a centralized basis on one or both railroads, such as train dispatching, locomotive management and crew dispatching. It found many potential efficiencies through merged operations.

1. Train Dispatching: At UP's state-of-the-art Harriman Dispatching Center in Omaha, 41 dispatching desks work around the clock to control trains across the UP system, including recently-acquired CNW tracks. Within the last year, SP also centralized dispatching on its railroad at a modern center in Denver. At both centers, dispatchers use computer terminals to control train movements, set switches and signals in CTC territory, issue track warrants, authorize maintenance activities and conduct other dispatching functions. SP's system uses PC-based work stations, while UP's Harriman Center uses mainframe computers and large displays of track segments showing locations of trains.

In addition, the UP center has a feature that SP does not have, called Computer Assisted Dispatching, or "CAD." CAD automates the dispatcher's routine decisions by identifying routes for trains in CTC territory.

Ultimately, UP/SP will combine dispatching at a single system location, but that will not be accomplished in the first years after the merger. For at least the next several years, it makes more sense to use both dispatching centers and to link them electronically. With present technology, neither center has the capacity today to absorb the other's work. By linking and ultimately combining the UP and SP dispatching systems and adopting the best technologies of both systems, UP/SP will be able to dispatch the entire railroad with 172 fewer dispatchers and related personnel, saving over $15 million annually.

UP is developing a new technology for the next generation of automated train dispatching which may suggest a different facility or form of organization. This next generation of dispatching technology will include a radically new way of dispatching trains. All dispatching systems today rely primarily on the judgment of experienced train dispatchers, who exercise their best judgment to advance the trains on their territory and those they expect in coming hours. However, not even the most experienced dispatcher with the most sophisticated planning system in use today has the breadth of knowledge or comprehensive information necessary to make the optimal dispatching decision -- one that reduces costs and maximizes customer satisfaction.

For example, when faced with the decision whether to stop a through freight on a busy mainline to pick up a single car containing an important shipment, neither the dispatcher nor operating managers can evaluate the tradeoffs inherent in the decision,

including the downstream effects of stopping the train on other trains, the economic benefits of picking up the car and other perspectives.

UP is developing a new version of "CAD," which will add comprehensive analysis of the system effects of dispatching decisions, with a focus on customer service, not railroad convenience. This will allow dispatchers to make decisions that are most consistent with the entire range of commitments the railroad has made to its customers and that minimize the costs of providing service, taking into account dozens of factors no individual could assimilate. This system can also be used as a sophisticated planning tool. UP/SP will extend this capability to dispatchers who control not only UP territory, but also SP territory.

2. Locomotive Management and Utilization. By using more direct routes, running trains faster in many corridors, eliminating helper locomotives, triangulating locomotive movements and combining traffic flows that now require separate trains on the two railroads, UP/SP will be able to use locomotives more efficiently and consume less fuel. Looking only at 1994 traffic, a merged UP/SP could have handled the same traffic with 210 fewer 4,400-hp. through-freight locomotives worth approximately $410 million and 80 fewer local and yard locomotives. In fact, we determined that UP/SP could handle all the traffic projected for the merged system, including traffic resulting from extended hauls, new marketing opportunities and truck-to-intermodal diversions, with approximately the same number of locomotives they used as separate companies in 1994 to transport less business. The same efficiencies will allow UP/SP to transport a given volume of freight with significantly lower locomotive fuel consumption. UP/SP would have burned about

25.6 million fewer gallons of diesel fuel based on 1994 traffic levels. At today's average market price of $.65/gallon, that translates into an annual cost reduction of almost $17 million. A further benefit will be significantly reduced air emissions as a result of reduced fuel consumption.

3. Crew Management. By adopting TCS, UP/SP will be able to use UP's Crew Management System on SP routes. This software allows UP crew managers to be substantially more efficient than their SP counterparts, whose productivity is only 65 percent of UP's based on calls handled or 60 percent of UP's based on train and yard crew employees handled. UP/SP will be able to manage crews with 62 fewer agreement employees and 10 fewer managers, saving approximately $4.3 million annually.

In addition, the quality of crew management will improve. Due to lack of technological support, SP crew managers sometimes have difficulty anticipating crew shortages until they occur. For example, SP crew dispatchers in Denver sometimes lack information that would enable them to reposition crews in advance of an imbalance at Pueblo or Minturn, Colorado, even though operating personnel in the field can see that crews are becoming imbalanced. UP's systems alert crew dispatchers to such problems in advance.

4. Timekeeping Functions. SP's timekeeping activities are approximately one-third less efficient than UP's comparable functions, again primarily due to less effective technology. By applying UP technology and practices to SP timekeeping, the UP/SP system can save over $6 million annually.

5. Train Crew Reporting. UP/SP will adopt on a systemwide basis an SP system called C-CATS, which eliminates the need for train crews to prepare written timekeeping reports and the need to use clerical personnel to process the information. SP train crews enter timekeeping information on computer terminals, which automatically record the information and compute compensation.

6. Operating Department Administration. SP and UP have separate operating management teams, just as they have separate corporate support functions such as executive officers, lawyers and accountants. In the operating area, these duplicate management functions include engineering, equipment maintenance, communications, police, purchasing, freight claims, fleet management and labor relations, as well as field level operating supervisors. Through merger, these activities can be consolidated, generating operating savings that translate directly into the ability to produce transportation at less expense, resulting in benefits to shippers and the public.

B. Engineering Services

In the short term, engineering costs for a UP/SP system will increase dramatically, as we invest heavily in capital improvements. These will include not only corridor upgrades on SP and UP lines, but also numerous connections throughout the combined system to facilitate new operating patterns.

Over the long term, UP and SP will save approximately $5.6 million annually through more efficient track and signal repair and maintenance. We did not attempt to quantify all the efficiency savings resulting from combining our two companies, because some of the savings will be offset by improving maintenance practices on SP lines. (One

small example is that SP's weed control program along its rights of way has fallen behind. UP/SP will spend more to keep the weeds at bay.) Programs like those do not have a payoff visible to shippers, but they ensure that the railroad will be in good condition in future years.

UP/SP will also increase annual spending on track and signals on SP lines. SP has done a good job of maintaining its mainline rail and track structure on core routes. Elsewhere, such as secondary lines and yards, jointed rail was not replaced with continuous welded rail and ties were not replaced with the same frequency as on UP. UP/SP will adopt UP maintenance of way practices throughout the SP system, ensuring that SP lines are maintained to high standards for future decades.

Engineering activities can be viewed as involving four main areas: (1) general office functions, such as design, planning, budgets, public projects, contracts, purchasing track materials, leasing maintenance equipment, environmental review, and supervision of system and division-level work; (2) system gangs or project teams, which work throughout the system as needed; (3) heavy equipment repair, and (4) on-line, division-based support personnel and facilities.

1. General Office Functions. With the adoption of common standards throughout the system, the general office functions of the two companies will become largely duplicative and can be consolidated.

Significant expense reductions are also expected in the reallocation of purchases among ballast and tie suppliers. In 1994, taking the lowest-cost supplier as index 100, the prices of the 20 major ballast suppliers for the two companies ranged up to index 199.7.

Location of the supplier and distance to the point of application are always factors, but large savings can be realized by choosing lower-cost options from among the multiple comparable sources. UP/SP will obtain 50 percent of the ballast requirements for SP's existing lines from UP quarries, for an average price $2.29 per ton less than ballast from SP quarries.

SP and UP have slightly different rail section specifications for new mainline construction and renewal: SP uses 136-pound rail, while UP uses 133-pound rail, which is comparable. Adoption of the UP standard will save over $900,000 per year. In addition, combining the purchasing power of the two railroads should lead to greater per-unit cost savings when larger orders are placed. Similar savings will be realized in the purchase of other track materials, such as spikes, tie plates, switch materials and the like.

UP can perform rail grinding, rail testing, rail welding, panel track fabrication and track geometry testing at lower cost than SP. In some cases, SP uses outside contractors, while UP -- after evaluating external against internal costs -- has concluded that it can do the work more efficiently. Further efficiencies can be obtained by combining UP and SP volumes. In this area, UP/SP again will use UP best practices, saving about $2.2 million annually, after some initial investment.

2. System Gangs and Projects. The system gangs cover what is referred to as "program" work, major projects requiring specialized equipment and augmented forces, such as rail renewal, tie programs, bridge and tunnel heavy repairs or construction, and major communications and signal projects.

Many years ago, track maintenance depended upon section gangs located every ten to twenty miles, each responsible for the maintenance of a short segment of the railroad. As labor-saving equipment was designed and machines were developed that cleaned or spread ballast, pulled old and placed new ties, spiked rails in place, and lined and surfaced track at a miles-per-day rate, division-level maintenance work was redesigned and reliance placed on production gangs which covered the system for the major renewals. Combining the equipment and employees of the production gangs for the two companies, who often work in the same geographic area, will give planners greater scheduling opportunities for optimum production in all seasons. Because the gangs will be used more efficiently, UP/SP will be able to perform the same quality of maintenance with two fewer tie gangs and four fewer curve gangs. Purchases of associated equipment will also be avoided. Labor organization changes required for efficient use of system gangs are described in Appendix A to the Operating Plan.

3. Maintenance of Way Repair Shops. SP has a new repair facility at Denver for maintenance of way equipment. UP uses an outdated shop in an old building in Pocatello, as well as a smaller shop in Ft. Worth. Most of this work will be combined at the SP Denver shop. Ft. Worth will continue to perform light repairs.

4. Maintenance Districts. Notwithstanding the major shift to production machinery, there continues to be a substantial need for locally based forces to deal with day-to-day maintenance that cannot wait for the next renewal cycle, and to regularly inspect track, tunnels, bridges and structures. These activities are essentially division- or district-based. Redesign of operating units and re-channeling of traffic brought about by the merger will

allow UP/SP to combine these forces in a more efficient manner, as described in Appendix A to the Operating Plan.

C. Locomotive and Car Repair Facilities

The Operating Plan produces savings by combining, where appropriate, the work of existing UP and SP car and locomotive facilities at a single location. To determine which facilities should be closed, two separate inquiries were made: (1) where are the best locations for heavy rebuild or overhaul facilities, based on convenience to anticipated traffic patterns on the new system; and (2) what on-line facilities are needed to support individual traffic flows.

1. Locomotive Repairs. UP has a locomotive overhaul shop at North Little Rock (Jenks), and SP has a comparable heavy repair facility at Denver (Burnham). The joint team concluded that both shops should be retained, but each should specialize: Denver should handle the General Electric locomotive units (in light of the fact that 70% of UP's GE fleet is assigned to the territory west of and including North Platte), and North Little Rock should handle the EMD (Electro-Motive Division) units. Traction motor and wheel shops in Sacramento and supporting work in Los Angeles will be transferred to the GE program at Denver. An SP "Power-by-the-Mile" program under which EMD maintains GP-60 locomotives using SP employees will be transferred from an EMD facility in Kansas City to an existing SP facility in El Paso, Texas. SP's locomotive repair shop at Hardy Street in Houston will be closed, and its work distributed to another location in Houston, as well as to El Paso and North Little Rock.

UP/SP will realign locomotive running repair shops to serve the route structure of the merged system. UP/SP will build a new $21 million running repair facility at West Colton, replacing an older and inefficiently located shop at Taylor Yard. UP's running repair facility at Stockton will be closed and its work relocated to Roseville. Independently of the merger, UP is constructing a major running repair facility at Hinkle, Oregon. These three facilities will give UP/SP excellent coverage of its western route network. In addition to these changes, a number of improvements and modifications will be made to locomotive servicing facilities throughout the UP/SP system.

2. Freight Car Repairs. UP has system car shops for heavy repairs at Pocatello, Idaho; DeSoto, Missouri; and Palestine, Texas. SP's system car shops are in Denver and Pine Bluff. After the merger, SP's Denver and Pine Bluff shops will be closed and their work will be moved to Pocatello and DeSoto, respectively.

SP and UP will consolidate "one-spot" car repair facilities for on-line repairs at several locations. These duplicative facilities will be consolidated at the SP yards in Salt Lake City, West Colton, Denver, and El Paso, and at the UP yards in Kansas City, New Orleans and Portland. In Northern California, SP's one-spot repair tracks are at Roseville and Oakland; UP's are at Stockton and Lathrop. These facilities will be consolidated at SP's Roseville and Oakland facilities and UP's Lathrop intermodal terminal. In addition, the combined system will realize cost savings by eliminating several smaller maintenance operations at outlying locations.

D. Procurement Savings

UP and SP purchase many of the same types of materials and services. As a result of the merger, the procurement functions of the two railroads can be combined. Since it takes no more time to work on a contract for 2,000,000 spikes (or any other item or service we purchase) than 1,000,000 spikes, UP/SP can perform these functions with fewer personnel. In some instances, notably with respect to locomotives, UP/SP joint purchases will qualify for higher levels of volume pricing reductions. In the case of 6,000-hp AC locomotives, we expect the savings in a normal year to be approximately $29 million. Volume purchases of locomotive fuel should save approximately $10.8 million. UP/SP will also terminate several million dollars in locomotive fuel procurement fees paid by SP.

UP has adopted rigorous contracting and acquisition procedures to ensure that it obtains the lowest possible prices from key suppliers and enforces all warranty rights. SP does not have such systems. Based on actual experience in applying these procedures to UP contracts, we expect to reduce SP purchasing expenses by at least $50 million annually.

CONCLUSION

Separate testimony by Mr. King:

For those of us in the UP Operating Department, this is both the most challenging and the most exciting time of our careers. With the BN/Santa Fe merger, UP faces a larger, better financed competitor with superior routes in all three of the major transcontinental freight corridors. We have been challenged, and improved, under the

pressures of deregulation, just-in-time delivery and Total Quality Management, but we know that we will now be called upon to perform and deliver as never before.

While the new competitive challenge comes from BN/Santa Fe, the excitement comes from the prospect of what we can do with our colleagues at SP. Yes, UP wanted to join forces with SP partly because we did not want to be relegated to the position of clearly second-best in the West, playing catch-up to the huge BN/Santa Fe system that surrounds us. But there is much more to this merger than pride. Most of us, like Mr. Barriger, have long considered SP to be UP's "natural" merger partner. The fit between our routes is at least as solid today as it was a century ago, and the service opportunities even more promising. UP has a fine physical plant and we run a lot of trains, but on many routes and for many types of traffic, we have to go farther than our rivals and cannot be as fast. With SP as our partner, this will change: from St. Louis to Los Angeles, from Chicago to Northern California, from Los Angeles to Seattle and Seattle to New Orleans, from Memphis to the Inland Empire, from Chicago to Houston and throughout our service territory, we expect to run stride-for-stride with anyone, including BN/Santa Fe.

Separate testimony by Mr. Ongerth:

On a personal note, I have a feeling of sadness that Southern Pacific, an historic company which played a major role in the settlement and then development of the American West, and which has in the past contributed much to the art and science of railroading, is now a diminishing entity in an industry of giants. SP faces a difficult future if it continues to compete independently, handicapped by persistent operating cash flow

shortages in its efforts to provide the kind and quality of dependable services demanded by its shippers and routinely furnished by UP and the impressive new BN/Santa Fe system.

On the other hand, I take pride in the fact that we have preserved a strong basic transportation plant in the face of much adversity, and that our merger is with an historic partner that helped build SP's plant when the two companies were joined in the early years of this century. The two properties are now uniquely situated to create a new and higher standard of efficiency and service which will benefit the shippers using both. SP shippers will realize not only the stability and dependability that only a strong, well-resourced carrier can provide, but also transit time improvements systemwide. UP shippers will realize systemwide service gains attributable to putting together two physical plants whose combination creates new opportunities for achieving efficiencies, getting the most from the available physical plant, and creating new services which bypass points of chronic congestion in the Western rail network.

While SP as a separate entity will fade from the scene, the higher standards of service and efficiency which the contribution of its properties makes possible will benefit shippers and the public for generations to come.

VERIFICATION

STATE OF NEBRASKA)
) ss.
COUNTY OF DOUGLAS)

R. Bradley King, being duly sworn, deposes and says that he is the Vice President of Transportation of Union Pacific Railroad Company and Missouri Pacific Railroad Company, and has read the foregoing statement, knows the contents thereof, and that the same is true and correct.

R. Bradley King

Subscribed and sworn to before me by R. Bradley King this 16TH day of November, 1995.

GENERAL NOTARY-State of Nebraska
WILF. SOMMERVELL
My Comm. Exp. Jan. 10, 1996

Notary Public

VERIFICATION

STATE OF CALIFORNIA)
) ss.
CITY AND COUNTY OF SAN FRANCISCO)

M. D. ONGERTH, being duly sworn, deposes and says that he is the Vice President-Strategic Development of Southern Pacific Transportation Company and has read the foregoing document, knows the contents thereof, and that the same is true and correct.

M. D. Ongerth
M. D. ONGERTH

Subscribed and sworn to before me by M. D. Ongerth this 15th day of November, 1995.

Virginia Fraire-Fong
Notary Public

VIRGINIA FRAIRE-FONG
COMM. #1021308
NOTARY PUBLIC-CALIFORNIA
SAN FRANCISCO COUNTY
My Comm. Expires Mar. 23, 1998

EXHIBIT 13

UP/SP OPERATING PLAN

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UP/SP OPERATING PLAN

1.0 INTRODUCTION

1.1 Purpose and Scope

This Operating Plan describes how a unified Union Pacific/Southern Pacific system would operate and serve its customers. The Operating Plan encompasses the following functional areas: (1) transportation; (2) mechanical; (3) engineering; (4) Operating Department organization; and (5) management information systems and communications. In each of these areas, the Operating Plan shows how SP and UP activities, personnel and facilities would be integrated and describes the expected impacts on service, traffic density, terminal operations and labor. The Operating Plan also reflects the costs and quantified economic benefits of these integrations.

2.0 DEVELOPMENT OF THE OPERATING PLAN

2.1 Base Period

The Operating Plan was constructed using 1994 traffic levels, modified to take into account the estimated impacts of the UP/CNW merger, the BN/Santa Fe merger, and the conditions granted in settlement agreements between the BN/Santa Fe applicants and SP, KCS and UP. These modifications are described in the Traffic Study.

To provide as accurate an indication of operating patterns as possible, UP and SP planners identified freight train schedules and other operating data for the most recent period during 1995 for which this information was available when planning began. Like the traffic data, these data were modified to take into account anticipated changes

resulting from the UP/CNW merger, the BN/Santa Fe merger, and BN/Santa Fe's settlement agreements. The Operating Plan treats three additional events as having been completed before a UP/SP merger. It assumes that UP has completed a new intermodal facility at West Memphis, Arkansas, and a locomotive running repair shop at Hinkle, Oregon, because UP was pursuing those plans before this transaction was announced. The Plan also assumes that through trains cannot operate over the SP line west of Phoenix to Wellton, Arizona, because of SP's independent, pre-merger decision to discontinue service over part of that line.

2.2 Car Flows and Traffic Densities

Traffic data for loaded movements during the base period were developed for each carrier by applying to each loaded movement an empty-return factor for each car type in the opposite direction to the movement of the load, except in a small number of circumstances where this would have distorted known operations involving a backhaul arrangement. As an example, after their release from Geneva Steel at Geneva, Utah, the empty cars that handle iron ore from Minnesota are used for backhaul coal movements to the Midwest from SP coal mines in Utah and Colorado.

For intermodal carloads, it was assumed that 1.83 trailers or containers would move on each intermodal platform. Gross tons were developed by adding to the net tons involved in each loaded movement (1) the tare weight of the car, trailer or container and (2) the tare weight multiplied by the appropriate empty-return factor for the move.

Using a computer model, loaded and empty traffic in the base period for each separate system was routed across that system and assigned to appropriate trains based

on the blocking plan and train schedules for the base period.[1/] The computer model maintained counts of trains, cars and gross tonnage on each line segment, as well as car flows through terminals. It also compiled total car-mile, car-hour and gross-ton-mile data. Locomotive tonnages by segment were calculated on the basis of freight gross ton miles.

To create a merged UP/SP scenario, the two traffic data bases were combined and then modified to include the impacts of extended hauls, new marketing opportunities, diversions from trucks, and the UP/SP settlement with BN/Santa Fe. Again using the computer model, the resulting traffic was flowed across a merged UP/SP system and assigned to appropriate blocks and trains based on a merged operating scenario for the UP/SP system.

To quantify changes in line segment density and terminal activity, statistics on car miles, car hours, trains, gross ton-miles and terminal volumes for the merged system were compared with those developed for the separate UP and SP systems. These comparisons suggested changes in routing, blocking, and train schedules, as well as the need for capacity improvements. The final UP/SP Operating Plan was developed through an iterative process of running the computer model with a particular blocking and train schedule scenario, reviewing the results, and then revising the plan as necessary for a subsequent computer run.

Every effort was made to ensure that the proposed train schedules, blocking plans and terminal functions are conservative, realistic and practical and will accommodate

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[1/] Base-period SP train schedules were identified manually by SP personnel due to variations in SP train operations from those scheduled during that period.