

Pennsylvania Commonwealth Piggyback Demonstration

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In the belief that a prototype intermodal service is crucial to the development of a national intermodal network, the Bureau of Science and Technology of the Pennsylvania Department of Commerce has been planning the Transcommonwealth Piggyback Demonstration Project. This has been developed to the point where it can be brought to operating status relatively quickly with a modest investment and will be of substantial value to federal rail planners. This paper presents the need for such a project, plans for providing a reasonable approximation of network-type service, potential value in terms of operating data obtained and momentum created for the development of a national network, and costs of carrying out the demonstration.

In 1973 the Bureau of Science and Technology of Pennsylvania's Department of Commerce became interested in intermodal transportation and in using rail as the line-haul mode. The Bureau asked James Romualdi to gather empirical data for the purpose of determining whether an intrastate piggyback service in Pennsylvania was warranted. Concurrently, the Pennsylvania Department of Commerce organized a seminar on the subject, attended by representatives of the American Association of Railroads, the Penn Central Transportation Company, then still a railroad, the Pennsylvania Department of Transportation (PennDOT), and at least one motor carrier, the New York Motor Freight.

The idea of a piggyback demonstration project between Philadelphia and Pittsburgh was generated in the course of the 1973 meeting. Convinced that such a demonstration would be crucial to the development of a national intermodal network, the Bureau of Science and Technology began planning one, which became known as the Commonwealth Piggyback Demonstration.

This project has now been developed to the point where we believe it can be of substantial value to federal rail planners. It can also be brought into operation relatively quickly and at a modest cost. In terms of the valuable information and momentum it can lend to network development, the potential returns far exceed the level of investment that would be required to bring it into being.

Also, Governor Shapp's long-standing interest in railroad transportation has probably had a good deal to do with the enthusiasm of the department of commerce; this is in keeping with Pennsylvania's historical interest in railroading. The largest railroad in the free world carried its name for some time.

A prospectus for this piggyback demonstration project was therefore developed by Gellman Research Associates. Despite widespread acceptance of the importance of resuscitating the railroads and of improving transport and labor and capital productivity and of effecting meaningful fuel conservation, there is still a great deal of inertia affecting the development of a national intermodal network.

DEMONSTRATION ADVANTAGES

Even though the Federal Railroad Administration (FRA) study indicates the feasibility of such an intermodal network, an operating piggyback demonstration is essential to overcoming this inertia. Performing the type of service at the actual price level if the entire network were

in operation would also provide the operating data necessary to handling many of the crucial questions now inhibiting network development. Further, it would serve as a test facility, providing the opportunity to experiment, under operating conditions, with innovative line-haul and terminal equipment techniques. It would also facilitate pricing experimentation and the trial of various intermodal interface arrangements. Not least, the experiment could provide a test bed to help settle such old, but still burning issues as the relative efficiency of container on flatcar versus trailer on flatcar.

It is a measure of our intellectual deficiencies in transport that such issues have not yet been decided. The demonstration project could aid in the identification and measurement of the benefits that would accrue to railroads and shippers, were such a network to be introduced on a national scale. The benefits to highway users and to the public at large would also be identified and measured.

DEMONSTRATION PROBLEMS

To be sure, substantial problems will have to be overcome in developing a demonstration that approximates network-type service and operates within the parameters of the current national intermodal transportation scheme. First, the speed and reliability of the network line-haul trains will be difficult to duplicate with existing equipment under the track conditions existing throughout much of the nation.

Another problem is that information on fully automated intermodal terminals is lacking. No such terminals are even in the prototype stage at this time. A third problem is that, because of existing labor rules, the labor cost component of a demonstration service will be substantially above what can be expected in network service, with modified labor rules within our grasp.

A further problem is that the prices of network services probably could not be duplicated without incurring a loss. The prices of intermodal network service in the intrastate Pennsylvania context could not be introduced without incurring a loss because of the demonstration's limited scope, which would necessitate spreading terminal capacity costs and overhead over a relatively small traffic volume. That is, it is doubtful that the set of rates introduced in Pennsylvania would reflect the rate structure if the system were to be profitable. Because some initial losses would be incurred, supporters of this project should enter it with the understanding that some losses must be borne now in order to gain the knowledge that will later offset these losses.

Another problem is that the desired cost-based rates would likely be at odds with the bulk of the current rate structure, which is heavily commodity oriented. Finally, pricing the service at a loss, because of the inability of the project to duplicate network economy in scale, would be in conflict with most price and regulatory policies and practices. Yet, the Bureau of Science and Technology has formulated a plan for a demonstration service, designed to circumvent these difficulties well enough to allow a reasonable approximation of network-type service.

DEMONSTRATION ROUTE

At present, service is planned to run between Philadelphia and Pittsburgh, paralleling the heavily traveled Pennsylvania Turnpike. Preliminary work done for the FRA has shown that the volume of traffic between these two cities that is potentially divertible to an intermodal-type service is among the highest in the nation. Consolidated Rail Corporation's (Conrail's) Pitcairn Yard, east of Pittsburgh, and a site at Plymouth Meeting, just northwest of Philadelphia, have been identified as possible terminal locations for this service.

Each evening, from Sunday through Friday, a fixed-length train would depart from Philadelphia to Pittsburgh, and another from Pittsburgh to Philadelphia. The service would be designed to allow shippers to drop trailers off at the terminal after normal business hours, with the assurance that these trailers would be available for pickup at the opposite terminal before the opening of business the following day. Because this service coincides with peak shipping and receiving periods, it duplicates service offered by overnight trucking.

At the inception of the service, both the Penn Central Transportation Company and the Reading Company became competitively interested, but now Conrail remains as the sole potential supplier of complete line-haul service between Philadelphia and Pittsburgh. It presently provides some intermodal service over longer routes but appears interested in the demonstration of this particular service over a shorter route of about 500 km (300 miles). Conrail cannot independently institute such an intermodal service because of lack of capital funds to build the necessary terminals with rapid-loading equipment. However, it has indicated a willingness to provide dedicated trains with high quality, well-maintained motor power and suitable flatcar equipment for the initial part of the project.

ROLE OF THE ICC

According to its normal practice, the Interstate Commerce Commission (ICC) could be expected to object to an arrangement that was not fully remunerative. Moreover, pricing would initially employ a "freight-all-kinds" rate technique that is generally in conflict with the commodity-based rate system used by ICC-regulated truck and rail carriers. Although there are exceptions, the commodity-based rate system dominates.

It is hoped that the intrastate nature of this demonstration service will remove it from the ICC purview to allow more flexibility in rate experimentation. The ICC, nonetheless, probably will attempt to extend its authority, at least to shipments using the demonstration system, if such shipments originate or terminate outside Pennsylvania, for example, shipments from Camden, New Jersey, to Akron, Ohio, traveling on this service between Philadelphia and Pittsburgh. International traffic would be a topic of particular interest to lawyers.

SHIPPERS, RATES, AND POLITICS

The initial technologically conventional demonstration service can, in fact, break even, although at projected rates it would require a utilization rate or load factor of approximately 90 percent to do so. Given a national intermodal network in place, it seems reasonable to assume that a 50 to 70 percent utilization rate could eventually be achieved. Starting at about 50 percent, it would climb to about 70 percent in the course of the project, and the levels of utilization in this service would result in annual losses of between \$1 and \$2

million annually. Although a considerable sum per se, it is insignificant when compared with the potential value that the demonstration service could have in aiding the development of a national intermodal network. It is, however, a substantial cost for Pennsylvania to bear alone. The development of the proposed demonstration service has been conducted thus far solely with the modest financial resources of the Bureau.

Modal choice simulation work done for the FRA gives evidence that a substantial portion of shippers would rather use an intermodal network than either common or private motor carriage, if speed and reliability were equal and the costs the same or lower. Even more surprising perhaps is that shippers providing their own transport state that they would be eager to get out of the transportation business if the carrier could provide them with service of equal quality at the same cost. In addition, reliability has been shown to be by far the most important service quality to shippers.

Much of the intermodal traffic that Conrail now carries between Philadelphia and points west of Pittsburgh comes from freight forwarders' and shippers' associations that were established primarily if not solely to take advantage of the freight-all-kinds piggyback rates that have been published to date in such a limited way. It is likely that a substantial portion of these same users would be interested in the proposed demonstration service; several prominent carriers have expressed substantial willingness to shift some of their freight to the projected service.

Clearly, there are limits to what carriers, especially common carriers, can do in this regard. Not the least of these limits relating to the Teamsters' constraints on the common carriers' ability to serve is the unions' potential functioning as a catalyst in the development of the national intermodal network; they could focus public attention on the concept. This type of interest is the basis for the broad political support that the development of the national network will require. There is a tendency to underestimate the importance of political support for this kind of an operation—political support that transcends the support of railroads, truckers, proprietors, Teamsters, and shippers.

A program carried out well in Pennsylvania could galvanize public opinion on the side of this sort of a proposition, not only in Pennsylvania, but, if properly broadcast, nationally. There is no reason why demonstration projects of this nature cannot be carried out simultaneously throughout the country.

PROJECT FUNDING

The proposed piggyback demonstration project is uniquely suited to the role of providing a demonstration of the level of service that would exist under a national intermodal network. Since July 1973, the Bureau has attempted to cull advice and suggestions from the various groups that would be affected by such service. The overwhelmingly positive reactions of those consulted have been quite encouraging.

The remaining tasks are a marketing study and the development of final plans for the construction of the two terminals, estimated to cost about \$2 million. This sum is beyond the limited resources of the Bureau alone, but it is possible that low interest loans, either through the Pennsylvania Industrial Authority or the Revenue Bond and Mortgage Plan in the state, will be made available to cover substantial portions of terminal construction costs. Because of the temporary nature of the service and its questionable ability to be economically self-sustaining, some sort of guarantee is likely to be required from the FRA. It is also possible that the high-

way department will be able to aid in building some of the terminal areas.

Funding needs during the service period will be limited to the initial working capital and expected operating deficits. At this point, these can only be estimated. However, the level of demand necessary to realize the objectives of the demonstration should also prevent the operating deficit from exceeding \$2 million annually. If demand is not great enough to keep the deficit below this, the project should not be launched. Lack of demand, however, should not be a problem.

The analysis suggests the conclusion that losses can

be limited to well under \$2 million. The trial period of the service should be of substantial length, in order that shippers may be induced to alter their present routing patterns. For planning purposes, this period has arbitrarily been set at 5 years. If the entire cost of the demonstration project reaches \$10 million (\$2 million a year for 5 years), it represents a very small investment compared with the project's massive potential value. The project might be the prototype of a national network.

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Intermodal Transport and Containerization

Howard W. Jones, General Foods Corporation

Shippers' associations began the development of intermodal operations about 10 years ago. Growth has been steady since that time because of improved transit times that make intermodal more competitive with truck and boxcar service. Containers also cost relatively little compared with boxcars. These capital considerations must be weighed by carrier management in future investing strategies. Many shippers are hopeful that intermodal will grow by using the flexibility of motor carrier deliveries with the economics of long-haul rail transportation. Private business must assist in the development of new concepts in intermodal transportation by cooperating with carriers, government, and shipper communities.

General Foods (GF) is a diversified processor and marketer of packaged grocery products, with worldwide operations and distribution capabilities. GF's net sales for fiscal year 1976 totaled almost \$4 billion.

The transportation scheme within GF is designed basically to support our distribution and to provide our customers with the best service available at acceptable cost. Until recently, GF was primarily rail oriented; that is, most of our raw and packaging materials were received at our plants by rail, finished products shipped to our distribution centers by rail, and approximately 50 percent of the volume moved from our distribution centers to customers by rail. In the last few years, however, GF has tended to shift more toward truck, and for 1976 our volume split about evenly between rail and truck. Transportation dollars are also divided equally.

To implement our transportation strategies, we have made extensive use of the grocery car developed about 15 years ago in cooperation with railroads and car equipment manufacturers. These cars are made available to us by about 20 major rail carriers.

GF'S INTERMODAL HISTORY

To give a user's or customer's perspective on the transportation industry, one must go back about 10 years to the time when GF began developing intermodal transport. Intermodal in this context refers primarily to land transport within the United States, of the truck-on-flatcar, container-on-flatcar, or piggyback type.

In our international operations, we have used containerization for a number of years, because it was de-

veloped both by the container people and by the steamship lines. Many of the advantages of containerization have been exploited by water carriers, but there appears to be a great deal still to be done with containerization as applied to land transport.

In 1967, when we began our intermodal operation, we used shippers' associations primarily. We shipped several hundred trailers that year and realized favorable cost reductions and reduced transit times. In 1976, GF shipped products in more than 2000 trailers, or about 10 times as much as in 1967, and continued to use our membership in shippers' associations.

In the following I shall discuss the use of shippers' associations, the growth in containerization use, how GF views the future as customers or users of containerization, and what some of the difficulties in the development of containerization are.

SHIPPER AND PIGGYBACK

Many shippers and customers began to use shippers' associations because of costs. The mixture rules and other pricing devices imposed by carriers in the last few decades to protect carload freight turned customers toward shippers' associations. The net result of this pricing strategy has been phenomenal growth of these associations in the last 10 to 15 years. In hindsight, at least, it appears that carriers' desire to protect the carload freight made them miss a good marketing opportunity.

The need for consolidators to perform so-called "marriage" arrangements because of mixture restrictions has eased in recent years, because the mixture rules themselves have been liberalized or eliminated. On the other hand, volume trains (10 trailers or more) increase the need for the consolidators to those shippers who cannot make the necessary minimums.

The growth in GF's piggyback traffic has developed because transit times are more competitive with existing truck service and much more dependable than carload service. For example, our experience with piggyback service has been excellent—in some cases, equal to or better than truck. Shipments from our Chicago plants to a distribution center in Dallas, for instance, have