

cation. The total market for middle distillates, of which the railroads are a relatively small user, should have a bearing on this. The total middle-distillate market includes household heating fuel as well as the fuel for many utility boilers that meet pollution requirements (the added cost of which is passed through to the customer). Maybe there could be another trust fund established on the basis of user charges to fund energy conversion. If there is a broad base of sources of funds collected in small quantities (as there is in the Highway Trust Fund), there is a large amount of money to work with. This would spread the cost of developing a feasible system of converting coal to diesel fuel over all the potential users, not just the transportation industry.

QUESTION: Could you explain further the debt-equity ratio?

ANSWER: The debt on the books should not have more than a one-to-one ratio to the book equity. Unfortunately many railroad companies have aggregate market values of their equities that are much lower than their book values. For some companies it has been that way for a long time. This further inhibits increasing the debt. It is a simple exercise to look at the price of the stock and multiply it by the number of shares to calculate the market value of such an equity. When you sell new equity at a market price per share that is lower than the book value per share of the old equity, you are in effect diluting the book value of it all on a per-share basis and thus eroding the value of the present holdings. This then has to be made up out of earnings. The debt-equity ratio does not deal permanently with a certain amount of debt. If the equity grows, debt can also grow.

For example, a brief financial history of the Missouri Pacific Lines' present unique debt structure, a product of the bankruptcy period, may be of some help in understanding how things work. It has a high face amount of mortgage debt. The background is that the old New York State insurance law, enacted after the turn of the century, until recently restricted New York-based life insurance companies from owning equities; they could only own bonds. In 1933 the Missouri Pacific went bank-

rupt when two sizable noncallable bond issues came due that year in the middle of the depression. A short time later it began to make money again. After World War II it became increasingly profitable. This had the effect of perpetuating the reorganization process because of the inability to get agreement on a plan of reorganization to last long enough to get through the approval process. In fact, it is the only railroad I know of that began paying interest during its reorganization period on its senior debt (this was in 1948). The more junior creditors kept seeing chances to expand their participation.

When the capitalization was again restructured in final form in a desperate effort to get it out, a small equity was set out in the totally unrealistic form of two classes of stock, while a sizable amount of the old junior debt was set up as new debt rather than preferred stock. This created a greatly unbalanced debt-equity ratio. Fortunately, this junior debt is in the form of income bonds rather than fixed-interest bonds. As an analyst, I feel it would be legitimate to adjust the income-bond debt into a preferred stock and hence equity. Incidentally, the Missouri Pacific and its territory as a whole have been growing fast in many respects, including new chemical plants, forest products, and generally most kinds of traffic. Thus, with a strong, aggressive management and a well-maintained property, it ought to keep right on growing and becoming more prosperous.

QUESTION: What about proxy fights?

ANSWER: More often than not these occur when equity has already deteriorated in market value well below its book value. Then the financial raider, who often has an imperfect knowledge of the railroad industry, figures there are assets that are not earning their keep and, if culled out, would enhance earnings. While some may not like this attempt at a takeover—especially management—the raider performs an unpleasant but financially responsive role for an already sick situation. But in the railroad industry such cannibalization usually does not work and the frustration engendered makes it all the more difficult to manage the situation properly.

A Government View of Electrification

Thomas G. Allison, U.S. Senate Committee on Commerce, Science, and Transportation

The subject of railroad electrification in the United States presents something of a dilemma for those working in policy-making positions in the government. On the one hand, it is relatively easy to find statements supporting electrification made by both members of Congress and the executive branch. On the other hand, these various pronouncements do not seem to contain a great deal of weight when measured against the progress made since the 1930s in electrifying heavy-density main lines in this country.

One reason for the lack of progress could be that the

benefits of electrification have been somewhat overstated at times. In an article in *Trains* in 1946 (1), an electrification engineer was asked whether the electrification of the Pennsylvania Railroad had been successful:

"The answer is yes," he finally said, "but I am wondering just how to make the point clear. Perhaps this does it: It was the Pennsylvania Railroad electrification which, more than anything else, kept the government from taking over the railroads in this war as it did in the last. One might even say that if the Pennsylvania's eastern lines had not been electrified, we might have lost the war."

Asked to amplify, he continued, "The traffic to the central eastern

seaboard was the key to our wartime success, and the Pennsylvania is the key to this traffic. In the last war, it was the congestion backed up as far as the Pittsburgh area which necessitated rerouting of traffic to other roads with less capacity, and when they in turn became overloaded the government had to take over. In this war, the tremendous capacity of the electrified lines absorbed everything thrown into the central seaboard area and the traffic did not back up. All the way back across the country this capacity had its effect. The railroads were able to do the job, they stayed in the hands of their own management, and we won the war."

If one were to believe the statements made in this article, it would seem that the least that the government could have done since World War II is to sponsor further electrification of heavy-density railroad lines as a combination war memorial and defense precaution for any future conflicts that might occur.

The Executive Committee of the Transportation Research Board has identified the 10 most critical issues in transportation (2). At least seven of these ten issues pertain directly to main-line railroad electrification. The 1974 report of the government-industry task force on railroad electrification (3) specifically recommended that the government take an active role to help plan and fund railroad electrification when substantial improvements in national transportation efficiency can be achieved. The task force also recommended that legislation dealing with railroad improvement should permit assistance for railroad electrification projects in appropriate circumstances.

Partly in response to this report, Congress did enact legislation that allows railroads to apply for financial assistance for electrification projects—Title V of the Railroad Revitalization and Regulatory Reform Act of 1976. Unfortunately, since the enactment of that legislation no railroad has applied for assistance to electrify a heavy-density main line. Other parts of the Railroad Revitalization and Regulatory Reform Act of 1976 provide for a modernization of the electrification of the Northeast Corridor, including an extension of the electrified system from New Haven to Boston, and for electrification of the heavy-density freight main line of the Consolidated Rail Corporation (Conrail) from Pittsburgh to Harrisburg in a manner that will facilitate compatible operations with the Northeast Corridor. At the moment, Conrail is actively assessing this project, which may well become the first heavy-density freight main-line electrification project in the United States in almost 40 years.

But implementation of these electrification projects does not provide an adequate answer to the question of why, in light of its claimed benefits, electrification has not moved forward more rapidly in the United States. It has often been observed that, on almost every continent except North America, railroads are increasingly turning to electrification for a wide variety of reasons, and many of those reasons should be equally applicable here. The question seems all the more perplexing in view of the fact that the relatively capital-intensive United States is not engaging in electrification projects when such countries as Taiwan, Yugoslavia, and India are actively pursuing main-line electrification.

The government-industry task force on railroad electrification identified a number of issues that have influenced decisions by the railroad industry not to electrify, and many of these issues still have obvious validity. For instance, it is certainly true that diesel-electric locomotives have become standardized throughout the railroad industry. It is also true that they are relatively easy to purchase, even for the more marginal carriers. The operating familiarity of railroads in the United States with the relatively reliable diesel units typically manufactured here undoubtedly reinforces the familiarity of financing their purchase. It is also prob-

ably true that construction and successful operation of a major electrification project would go a long way toward breaking the ice. While there may not be a great rush to be second, the existence of an operationally and financially successful main-line electrification project would undoubtedly make even the most operationally conservative of domestic railroad managements consider seriously the benefits of electric traction.

After considering all the reasons for not electrifying—and assuming a rational and open mind on the part of railroad managements—one set of issues stands out. It is obvious that the issues surrounding financing of such a major capital investment must rank as the most important of all reasons that railroad electrification has not moved forward more rapidly. Not only do the economic benefits of electrification occur gradually over a long period of time, compared with the large investments necessary to initiate that flow of benefits, but many carriers can show a much higher short-term improvement in their operations through investments in other parts of their permanent way, such as rehabilitation of main lines and improved yard facilities.

Financing is available to purchase relatively reliable and proven diesel-electric locomotives, but financing is generally not available in any conventional manner for most carriers to engage in major electrification projects. Even carriers that could arrange for such financing may be unwilling to do so because of the massive increase in their debt that would result and the possible resultant inability to obtain capital in the future for other necessary improvements to their fixed plants. After numerous informal discussions with representatives of different railroads and the supply industry, I also believe that most railroads in the United States simply do not possess a clear and strong belief in the benefits of electrification compared with the benefits that could flow from government assistance in other areas, such as rehabilitation of track or reform of regulation. The railroad industry has never actively advocated that Congress should create any program to help electrify heavy-density main lines in the United States.

It seems to me that the reasons for the failure of the railroad industry to more aggressively advocate government financial assistance for railroad electrification probably combine inbred practices and familiarity with the existing fleet of diesel-electric power that has performed reasonably well, a lack of conviction regarding the benefits of electrification on the part of individual carriers, and perhaps a realization that major electrification projects should not be carried out in a vacuum. For instance, electrification could disrupt existing arrangements with other carriers, such as run-through trains, and perhaps should be looked at in a more comprehensive way, along with other improvements to the nation's rail system involving such issues as consolidation, mergers, elimination of excess trackage, and improvement of terminal and yard facilities.

When electrification is looked at in the context of all the improvements that would be desirable for the nation's railroad system, I do not believe that the government has treated electrification differently from many of the other important issues currently facing rail transportation in the United States. While financial assistance in the form of loans to railroads is available to a limited extent under the provisions of Title V of the Railroad Revitalization and Regulatory Reform Act, the implementation of that statute has not yet led to any applications from carriers for electrification projects. The recent change of administrations, particularly with respect to the U.S. Department of Transportation (DOT), may reverse this trend by promoting the use of these funds for improvement projects on a much wider scale, but I still

would tend to doubt whether railroad electrification will be significantly advanced by the existing railroad assistance programs, except in the case of Conrail and the Northeast Corridor.

In enacting Title V of the Railroad Revitalization and Regulatory Reform Act, Congress realized that the financing provisions contained in it—\$600 million of essentially low-interest loans and \$1 billion in loan guarantees—were inadequate to deal with the capital needs of the railroad industry. Because the Senate Commerce Committee was faced with varying estimates of the capital needs of the railroad industry, ranging from \$2 billion to \$12 billion, it was felt it was appropriate to enact an interim financing measure while a better determination of the long-range capital needs of the industry was made. Section 504 of that act required DOT to submit to Congress in August 1977 a complete study and estimate of the capital needs of the industry. Obviously, this is a very complicated subject that involves the competitive relationships of the various modes of transportation, which are in turn influenced by such decisions as whether to impose user charges on the nation's inland waterway system and whether to revise the amount of user charges for certain kinds of truck traffic. In fact, some have even suggested that, if appropriate regulatory and funding changes are made for other modes of transportation, the railroad industry would have no capital shortfall at all.

Whatever DOT and Congress ultimately recommend as the most appropriate form of capital assistance for the nation's railroad system, consideration may have to be given to treating assistance for major electrification projects in a slightly different manner from rehabilitation of permanent way. Because of the existing debt structure of many carriers, it may simply be impossible for them to finance railroad electrification projects, even with government assistance, if this financing results in additional debt. Furthermore, railroad electrification efforts should probably be carried out in conjunction with a national planning effort to maximize the benefits that could flow from electrification.

It may be necessary to finance electrification projects in a relatively unorthodox manner, such as direct government funding and ownership of electrification facilities with a lease to the applicable railroad in order to allow carriers to finance the improvement as an operating expense rather than as debt. Several other possible arrangements for financial assistance are conceivable; these involve concepts similar to leveraged leasing or a relatively conventional loan program that, when combined with coordinated improvements in the regulatory and competitive structure for the railroad industry, would allow the industry to carry the additional debt.

Although Congress and DOT seem quite favorable to moving ahead with some program to stimulate railroad electrification of heavy-density main lines in the United States, it is extremely unlikely that any major new government program will be enacted without the active support of America's railroad industry. It is unlikely that Congress will force the railroads to accept government money to engage in projects that the industry itself is not convinced will provide operating and financial benefits. In this sense, the government appears to be well ahead of the railroad industry with respect to advocacy of railroad electrification, and it would appear that this gap will have to be closed before any major new program specifically designed to promote electrification is enacted. Given the fact that Conrail may soon embark on the first major freight electrification project, it is possible that this gap will be closed in the near future.

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