Unidentified report on a debate between
H.F. Brown, Consulting Engineer, Gibbs & Hill and
H.G. McClean, Manager of Export Sales, GM/EMD.

"On the steam diesel thread, I had reproduced a conversation between GM's manager of sales and H.F. Brown on the subject. It was a useful exchange, partly from the standpoint of representing a discussion by professionals of contemporary events, partly as it was addressed to and reviewed by professionals within the industry and the specific railroad in question, and interesting from the standpoint that Stuart Saunders makes an appearance in the discussion:

H.G. McClean, Manager of Export Sales, GM/EMD:

"But perhaps the best refutation of [Brown's] statements came from the action of the Norfolk and Western Railroad. That was a large eastern railroad, having engaged in hauling coal and with, therefore, every incentive to use motive power energized by coal, whether steam locomotives or electrification. Some 100 miles of that railroad had been electrified through a mountainous area and handling heavy traffic in 1914. The railroad abandoned that electrification in 1951.

"Thereafter it had operated a fleet of modern steam locomotives in a way which was well known and admired throughout the world as a classically fine steam locomotive operation. In 1955 the Norfolk and Western had made the decision to buy their first diesel locomotive, and in 1958 had decided on complete dieselization. At the time of that decision they had a background of previous experience of electrification. They had excellent comparative operating costs for steam locomotives, possibly the best figures in the United States, and equally, as late starters, they had available to them from all the other railroads that had been dieselized, data on the results of dieselization on those lines to supplement their own diesel experience. The President of that railway, speaking at Roanoke 9th February, 1960 said, 'Our dieselization programme was a major factor in enabling us to improve our operating performance so substantially in 1959.' No more outstanding example is available to disprove the author's statement 'Diesel motive power has added to the financial burden of the railways.'"

H.F. Brown, Consulting Engineer, Gibbs & Hill:

"Mr. McClean has cited the 'action of the Norfolk and Western Railway as the best refutation of [Brown's] statements.' That was quite agreeable to [Brown], who had been a small shareholder in that well-managed railway for many years, and was quite familiar with its operations. It was one of the few financially sound railways in the United States because its principal traffic, coal, could not be diverted to automotive vehicles on highways. The experience of that railway with its motive power, steam, electric and diesel, was an excellent epitome of the whole subject under discussion.

"For years that railway had built its own steam motive power which was outstanding in its performance. But there was a short, difficult section of single-track line, having a 2.2 per cent grade against their prevailing heavy traffic in the mountains. That was further complicated by a long tunnel, creating a serious 'bottleneck' on their otherwise

two-track line. Electric operation of that section was installed in 1914 for helper service of the through traffic. Also for complete electric operation of the heavy coal trains from the various gathering yards over the summit of the grade to the main departure yard. From thence heavy steam power could take the trains downgrade to the seaport terminal. That electrification was paid for out of earnings; created no additional debt; satisfactorily solved the operating problems; and was just another part of smooth, economic railway operation.

"Like all railway electrification installed in the United States in those early days, it had been necessary to install its own power plant for its operation. Railway loads were far too heavy to be assumed by the small isolated industrial and lighting plants then existing. By 1950, after 35 years of exceptionally severe operation, including the 1941-1945 war requirements, the power plant and the electric motive power had reached the end of their economic service life. Both required replacement.

"The diesel manufacturers were immediately on their doorstep, dramatic sales-tools in hand, to convert them to the 'modern way' of operating their railway. Their motive power officials, being excellent steam locomotive manufacturers as well as operators and maintainers, had been quietly collecting the facts concerning diesel operation from their associates on the connecting lines -- of which there were many. They compared the 'dramatized version' of the facts collected and saw further that their own steam costs were below either version of the diesel costs.

"That railway being principally engaged in coal haulage, and having excellent steam locomotives, had elected to retain their steam operation. They spent a considerable sum out of earnings to construct an entirely new double-track line over a new route through the mountains. That had much more favourable grades and a larger, shorter, double-track tunnel, all of which replaced the former single-track section that had required the electric operation. They had then returned to complete through operation with steam at speeds that were higher than the fixed-speed induction-motor type of electric locomotives had been capable of performing. All that was accomplished with no increase in debt and at about the same cost as new electric motive power and power supply.

"In 1955 there was a sharp increase in the coal export business to Europe. Additional motive power was required -- and soon. Their steam motive power had increased in age and was becoming more expensive to maintain. More especially since all other steam locomotive manufacturing had ceased, even for the various small replacement details, formerly easily obtained from suppliers, were no longer available. The Norfolk and Western had no decision to make by comparing motive power costs. They had no choice. They could no longer build, maintain, or purchase steam. They had no time to study and develop the new commercial frequency electrification for 60-cycle operation which would be required. They purchased diesels from the two manufacturing companies and it cost them approximately $86,000,000. That was more than they wished to divert from the unappropriated earned surplus. So, like all other railways, these were purchased by means of equipment trust certificates.

"[Brown] had a copy of the speech made by the President of that railway, referred to by Mr. McClean, relative to dieselization. Of course, he had to explain the expenditure

of the large sum in the best light to the shareholders. He could not be criticized by anyone for what he had to do, nor were his statements incorrect. New diesels had saved materially in maintenance costs, compared with much older steam power now retired. Also, diesel oil was much cheaper at the present time than the very high grade, high BTU content Pocahontas coal, formerly used. [At that point] the N&W was enjoying the balmy days of initial diesel operation, as other railways were doing in 1950-1953.

"But all costs do not appear in operating costs or operating ratios. And that was the part censored in all the 'dramatized versions'. The N&W, which for years had been free from debt except for a very small mortgage bond issue, largely covered by sinking fund accumulation, was now *for the first time in its history,* burdened with a large debt represented by equipment obligations. It was paying off that debt at the rate of $5,662,000 per year on the principal, plus annual interest charges of $1,700,000, a total of $7,362,000.

"The main point to note was that by the time that debt was paid, the equipment would be worn out and that a larger debt would have to be renewed for replacement motive power. There was no denying that the financial burden on the railway had been increased by more than $7,000,000 annually, because of the *necessity* of adopting diesel motive power. That financial burden must be carried until a type of motive power having a much longer life took its place. The fact that that particular railway could, at the present time, assume that debt without too much drain on earnings had no bearing on the thesis."