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A HISTORICAL STUDY OF MANAGEMENT-LABOR RELATIONS
PERTAINING TO THE DIESELIZATION OF
RAILROADS IN THE UNITED STATES

DISSERTATION
Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By
Philip Adler, Jr., B. S., M. B. A.

The Ohio State University
1966

Approved by:

[Signature]

Michael J. Schweitzer
Department of Business Organization
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Philip Adler, Jr.
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CHAPTER I

INTRODUCTION

Character of Railroad Technological Change

Railroading in the American society is more than an industry; it is an institution that has played a dominant role in developing the nation and continues to be a vital force in the total welfare of the economic system. Because of the strategic position of the railroads within the transportation network, their operating problems frequently are regarded as national issues. Although public interest in railroading has been dimmed in recent years by the appearance of competing forms of transportation, there has been no slackening in railway technological development. Modern railroad technology is, in fact, an awesome complex of scientific achievement.

The locomotive, one of the most fundamental and fascinating elements of railroad technology, serves as the focal point for this investigation. From the very beginning of United States railway operations in the 1830's until the end of the steam era in the early 1950's, the steam engine and locomotive generally were considered as synonymous by the American public. So great was the identification of steam with railroad motive power that the early diesels were referred to as
"streamliners," rather than locomotives. The term "locomotive" and all the Americana it represented, nostalgically was reserved for designation of the steam engine.

The adoption of the diesel and corresponding demise of steam power, like so many railroad technological changes, was a gradual process. It began in 1923, with the first successful application of the diesel engine to a railroad locomotive, and virtually was completed by 1960.

Various writers have commented as follows upon the gradual nature of railroad technological change:

So complex is a railroad that major changes must be made gradually and with due recognition of the effect upon other operations . . . . Each device must be considered in relation to all other factors of operation and must operate in complete harmony with older but similar equipment, or else it must be modified, introduced in a different fashion, or withheld until a more propitious time.1

The average technological situation in such an industry as the railroads, the representative way of doing things, changes only slowly. The railroads have been characterized by steadiness and persistence relevant to technological change and this is due to:

a. Most innovations are inherently gradual in nature. For example, diesel power embodies numerous features successively introduced over a time span of several decades.

b. The introduction into general practice even of a perfected and seasoned improvement must inevitably be a gradual affair.2

There appear to be three major factors that caused the prolonged period of dieselization on American railroads. First, railroad

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executives were skeptical of the claimed efficiencies of diesel locomotives, and, therefore, adopted a "wait and see" attitude toward them. Second, the railroads already had a very large investment in steam locomotives, many of which were of the latest design. A final factor concerned the condition that even though diesels were proving economical to operate, their initial cost was approximately twice that of equivalent types of steam power.3

Managerial concern over actual or potential labor problems of dieselization apparently had little, if any, effect upon the time or manner of conversion from steam to diesel locomotives. The prolonged period of dieselization seems to have been a function only of economic and technical features of the diesel itself. If the railroads had any fear of labor's position toward the diesel, they did not let it interfere with their acquisition of diesel locomotives. This condition might have been due to the fact that railroad management did not have the foresight to recognize the potential labor problems of dieselization. Perhaps, also, the railroads were so involved in the financial and technical problems associated with the purchase of diesel locomotives, they had no time or desire to consider the personnel problems this new type of motive power would create.

Technological change frequently is viewed by labor organizations as a potential menace to job security. One author has stated: "The average industrial worker's feeling of insecurity is intensified by rapid technological changes that are beyond his personal anticipation

3Transportation in America, p. 216.
and his preparation to meet such changes." Despite the fact that dieselization was not a particularly rapid technological change, the adoption of diesel motive power, nevertheless, created a severe labor-management controversy over the issue of job security. Union leaders, deeply concerned with the possible labor consequences of dieselization and other advances in railroad technology, have been particularly vehement in their attempts to protect railroad employees from any "unfavorable" technological change. An industrial sociologist has commented in regard to this problem:

Some unions demand the employment of unnecessary workers; a prime and often cited example is the fireman on the coal-less diesel locomotive. Where unneeded workers are employed, there has often been a history of technological change and worker displacement.5

The negative aspects of such union policies have been expressed by one famous labor authority as follows:

Make work rules are not a satisfactory arrangement for dealing with the displacement of labor by technological changes because these rules are permanent in their effects. All that is needed when technological change threatens men with displacement is a temporary arrangement to give men work pending the time when the natural attrition of the working force will eliminate the excessive numbers.6

Although diesel motive power so frequently has been considered by labor leaders as a threat to the job security of railroad workers, an opposite viewpoint has recognized the contribution of dieselization

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to the preservation of railroad employment. An exponent of this concept has stated:

Total job opportunities depend, more than anything else, upon the total volume of traffic the railroads are called upon to carry. In giving the railroads a means of securing economies necessary for any improvement of their competitive position, dieselization served to increase the total volume of traffic to be handled and thus tended to preserve jobs, and maybe to create new ones. Such an effect on jobs might very well be referred to as technological employment.7

It is apparent that the diesel locomotive has created railroad personnel problems as complicated as its own electro-mechanical operation. The gravest danger of this situation is that it has tended to pit man against machine in wasteful competition, rather than enabling the machine to facilitate the development of a more efficient transportation system.

Purpose and Nature of the Study

The purpose of this study is to examine the personnel problems encountered when a large and heavily capitalized industry experiences a major technological change in its mode of operations. Emphasis is placed upon the manner in which labor and management react to such problems, so as to reveal their particular patterns of behavior during a technological conversion process. The study further seeks to determine the nature of the interplay of man and machine during technological change, through an investigation of the man-machine problems associated with railroad dieselization. Thus mechanical characteristics of railroad motive power are examined in conjunction with the behavioral characteristics of certain categories of railroad employees. It is hoped

that the findings will be helpful to management in its task of planning, organizing, and controlling a work force under conditions of major technological change.

This investigation is conducted by tracing historical changes. The material is presented so as to integrate the technological evolution of railroad motive power with associated personnel problems. In this regard, the study attempts to answer the following specific questions:

a. In what manner did the evolution of locomotive design contribute to the development of contemporary railroad personnel problems?

b. What are the manpower requirements for safe-efficient operation of diesel locomotives in passenger, freight, and yard service, and how valid are labor-management arguments on this issue?

c. What railroad employee social-psychological problems were created by the introduction of the diesel locomotive?

d. What have been the patterns of action of the railroad unions in the diesel crew dispute, and what effect did dieselization have upon inter-union relations in the railroad industry?

e. What have been the patterns of action of railroad management in the diesel crew dispute, and how effective have they been?

f. What errors have been made by railroad management in handling the personnel problems of dieselization, and, accordingly, what can be learned from the diesel dispute to improve managerial handling of technological change?

g. What effect did the various pertinent formal labor-management agreements, as well as board recommendations and awards, have upon the diesel crew dispute?

Scope of the Study

The text of this study is confined to a description and analysis of the technical nature of dieselization and related personnel problems on railroads of the United States. The investigation, accordingly,
is concerned with issues which pertain to the procurement, development, maintenance, and utilization of the railroad work force.

More specifically, the study seeks to examine the impact of dieselization upon engine service personnel. Secondary consideration is given to the effects of dieselization upon train crew members. Together, these two groups comprise approximately 22 per cent of the nation's total railroad work force. A very limited amount of attention is directed toward the impact of dieselization upon locomotive maintenance specialists. For most other categories of railroad employees, the introduction of diesel motive power caused no more than a relatively simple adjustment of their normal daily work routines to incorporate the peculiar characteristics of dieselized operations. Thus this study makes no attempt to examine the effects of dieselization upon these other classes of railroad workers.

There are several reasons why this study is devoted primarily to an investigation of dieselization's impact upon engine service employees. First, it is a matter of public record that one of the most controversial labor problems of the contemporary period has involved the composition and duties of diesel locomotive operating crews. A second reason for placing major emphasis upon engine crews is a corollary of the first. Because of the severity of the labor-management dispute over the manning of diesel motive power, much of what has been stated on the subject seems to have been distorted intentionally by the interested parties. It appears that even some supposedly "sincere" remarks about the disputed issues have been inaccurate and confusing because of subconscious personal biases or lack of factual information. Of even greater
significance, in their attempts to influence public opinion, labor and management leaders presumably have focused attention upon only the most obvious and superficial aspects of the diesel crew controversy. Thus many seemingly "secondary," yet very pertinent factors regarding the effects of dieselization upon engine crews, have received little or no consideration by the general public. It is an objective of this study, therefore, to indicate and analyze not only the highly publicized phases of the diesel conversion, but also to examine lesser known and more subtle elements of this technological change. A third reason for the stated approach revolves around the relative intensity of the impact of the diesel conversion upon engine service personnel. Dieselization affected locomotive crew members in a far more spectacular, controversial, frustrating, and complex manner than it did any other class of railroad employees.

Methods and Limitations of the Research

The basis for much of the analysis within this study was gained through personal observation of steam and diesel locomotives in yard and main-line service. The technical aspects of diesel locomotive operation were studied in railroad engine crew training facilities, in locomotive maintenance shops, and aboard various types of diesel-powered trains. The author spent eight hours studying the controls and environment of a simulated diesel cab in the apprentice mechanic training school of a large Eastern railroad. It is believed that this training device is the only one of its kind in existence. Approximately fifty hours were spent in the control cabs of operating yard and road diesel locomotives,
observing the activities of engine crewmen. It is estimated that over five hundred hours of trackside inspections were made of steam and diesel operations in car classification yards and along main-line right of way.

Formal interviews and questionnaires were not considered as a practical means of gaining operative employee views on dieselization on account of the sensitive nature of the subject. However, seventy-three engine and train crew employees were interviewed informally by the author while on board trains and in railroad facilities. The following three basic questions were asked of these individuals:

a. In what manner did dieselization affect your job?

b. Do you prefer working with steam or diesel power, and why?

c. In your opinion, what was the effect of dieselization upon railroad labor relations?

Although it is recognized that these informally interviewed employees did not constitute a representative statistical sample of engine and train service personnel, their thoughts did facilitate a more intimate examination of the labor problems involved in the diesel conversion.

A limited number of formal interviews were conducted with railroad executives including two vice-presidents, three personnel superintendents, three mechanical superintendents, two traffic managers, and one training director, all of large Eastern roads. These interviews primarily yielded information of a very broad and general nature, covering the various railroads' adoption of diesel motive power. Supervisory and clerical personnel of cooperating railroads provided continuous aid throughout the research for this study, in interpreting technical data relevant to dieselization issues. The names of the participating railroad officials and their railroads are withheld by request.
General technical information concerning the operation of steam and diesel motive power was obtained from technical manuals of various railroads and locomotive manufacturers, transportation texts and periodicals, engine service personnel, and locomotive maintenance specialists. Transcripts of testimony, agreements, and awards resulting from formal hearings and negotiations conducted under the provisions of the Railway Labor Act of 1926, and its amendments, or under the auspices of special governmental commissions, have provided much of the basic information on dieselization labor problems. Various labor relations texts and miscellaneous material from the files of cooperating railroads served as a source of data on management-labor relations during the diesel conversion process. Newspaper and periodical articles provided a means of securing immediate information on the most recent developments in the diesel dispute.

It would appear that a major limitation of this investigation lies in the fact that many points of analysis are based upon the statements of individuals whose personal interests in the problems may have colored their views. Thus railroad operative employees may have evaluated particular dieselization issues upon a basis of associated personal benefit or detriment, rather than upon totally objective considerations. In addition, it is quite possible that some veteran railroad employees reacted negatively to dieselization, simply because of a subconscious nostalgic attachment to the displaced steam locomotive. Representatives of management, on the other hand, may have allowed their ideas on dieselization issues to be swayed by the carriers' public position on the subject.
It also should be recognized that the actions of diesel locomotive crews observed during "on board" research may have been affected by the presence of a visitor and accompanying supervisory personnel in the control cab. The author noted a far more relaxed and informal atmosphere in the control cab, whenever supervisory personnel were not aboard. It is further apparent that certain aspects of locomotive operation may have been misinterpreted by the author because of a lack of complete familiarity with the technical factors involved.

In this study, no attempt is made to investigate either administrative management problems or specific functional operating problems resulting from dieselization, unless such problems have had personnel management implications. Although it is not an objective of the study to evaluate the effects of dieselization upon the total political, social, and economic system, several issues explored within the scope of this research clearly have broad political, social, and economic significance. This would seem to be a natural consequence of a major technological change in an industry so vital to the society in which it exists.

Order of Presentation

Since the purpose, scope, and methods of research for the study have been outlined in this chapter, it is desirable to indicate the groupings under which the subsequent text material is presented. Chapter II describes the historical evolution of motive power on the nation's railroads. The operating characteristics of various forms of power are described and compared, with particular consideration given to the diesel locomotive. Attention is directed to specific personnel
problems created by peculiar technical features of the various types of locomotives, with the diesel, once again, receiving major emphasis.

Chapter III discusses the origin and unique nature of the non-steam locomotive crew dispute on railroads of the United States. Pertinent railroad labor history is presented in conjunction with those technological, political, social, and economic developments that set the stage for the diesel locomotive crew dispute. Chapter IV describes and analyzes the first fifteen years of the diesel locomotive crew controversy on railroads of the United States, and Chapter V does the same for the second fifteen years of the dispute. The various arguments of labor and management throughout the diesel crew dispute are described, analyzed, and evaluated. The effects of changes in locomotive design upon these labor-management arguments also are examined. Inter-union and intra-union problems connected with dieselization are discussed in detail, as are the roles and relationships of the various members of diesel locomotive crews. The presentation of material in both chapters is built around a framework composed of the formal diesel dispute negotiations and hearings which have taken place under the direction of mediation panels, arbitration boards, and special governmental commissions. Chapter VI presents a summary of conclusions and recommendations that seem justifiable upon the basis of the information collected.
EVOLUTION OF MOTIVE POWER ON AMERICAN RAILROADS

Human Interest in Railroad Locomotives

An analysis of the historical development of locomotive technology on railways of the United States facilitates an understanding of the fundamental man-machine problems involved in the diesel labor dispute. Thus this chapter examines the technological changes that have occurred in railway locomotives during the period of 1830 to 1966. The material is presented so as to integrate the mechanical features of railroad motive power with the behavioral patterns of associated railroad employees.

Motive power development on American railroads has been characterized by many of the engineering and human relations problems that ordinarily accompany industrial technological change. In at least one respect, however, American locomotive evolution experienced a peculiar

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1 For a general technical discussion and pictorial presentation of the development of the railroad locomotive, see the following texts: Lucius Beebe, Trains in Transition (New York: D. Appleton-Century Co., Inc., 1941); Edwin P. Alexander, American Locomotives (New York: Bonanza Books, 1950); Alfred W. Bruce, The Steam Locomotive in America (New York: Bonanza Books, 1952); David P. Morgan (Editor), Steam's Finest Hour (Milwaukee: Kalmbach Publishing Co., 1959); P. Ransome-Wallis (Editor), The Concise Encyclopedia of World Railway Locomotives (New York: Hawthorn Books, Inc., 1959); Linn H. Westcott (Editor), Steam Locomotives Cyclopedia (Milwaukee: Kalmbach Publishing Co., 1960), Vol. 1. For a statistical tabulation of the various types of locomotives in service during the diesel conversion period, see Appendix A of this study.
problem involving sentimental attachment to obsolete machinery. It would be indeed difficult to match the degree of human sentiment for industrial technology that was associated with the steam locomotive. It is important to note that this intense concern for steam motive power involved the general public as well as railroad personnel.

Although electric motive power units displaced some steam engines, the diesel achieved the dubious distinction of completely eliminating steam power from the locomotive rosters of the major American railroads. Only when attention is directed to the human interest in the steam locomotive, is it possible to appreciate the underlying significance of the diesel's role in the process of steam power elimination. In this regard, the following quotations highlight the intensity of feeling for the steam engine:

The steam engine, to many of those watching it pass from the American scene, was indeed a sensuous machine. Its lines bespoke grace and feminine charm - neither an indication of its beastly power - never really exploited to the fullest. On the job, the reciprocating locomotive acted with a delicate air, although - personal thing that it was - it breathed, panted or chortled like a human in performance of trying tasks. Yet in the manner of a sophisticated lady, the steam engine's nearness was known by the tinge of its curious perfume, a mixture of taffied oils and greases, boiled water and coal smoke. The glide of the steamer fascinated more than all else, perhaps. How such a wheeled marriage of artistic motion and sheer utility was made must remain a delightful mechanical wonder.²

. . . She (the steam locomotive) dominated all about her, even the men in her cab, yet you could stand in close beside tall driving wheels and oil filmed main rods. . . . She didn't hide her mechanisms beneath hoods or behind cowlings or deep in a hull either. From the fiery ashes filtering through the grates under the firebox to

²H. Reid, "While the Engine Steamed By," Trains, December, 1955, p. 16.
side rods and valve gear in perfect unison producing obvious energy, the steam locomotive was open and understandable. No secrets, no wondering what turns the propeller or shifts the gears .... In action she was like us - more like himself than all of man's other contrivings .... What man hearing a mallet, tackling a grade at night didn't respond to that distant exhaust, didn't detect a gradual loss of momentum, didn't subconsciously feel sympathy if she lost her feet and stalled? What was more exultant than doubleheaded Pacifics racing through at 75, shaking the earth, drawing all eyes and ears, stamping out for a moment all other thoughts, commanding complete attention? .... Whistles on engines were dogmatic, pleading, ambitious, anxious, once heard, they refused to be forgotten .... But what other mechanism besides the steam locomotive appealed to so many of the senses so deeply, so conquered emotions in the mass, and - when dead - brought so many to the funeral? 3

A vice-president of General Motors, the firm which, ironically, led the diesel development, stated his respect for the steam engine as follows:

So far as the public is concerned it has been a rapid transition. We have moved to replace a type of motive power that has been an important device in the whole history of America - the steam locomotive. It had as much to do with the development of America as any other device in our mechanical history - more, transportation-wise. Even today I live just far enough from a railroad to enjoy hearing the whistle of the steam locomotive; I don't know that I am going to like it when they quit running by, because that goes back to my childhood. 4

Perhaps, the public's feeling toward the steam locomotive was summarized best by the Detroit Free Press when it stated:

Among all the mechanical devices with which our generations have surrounded themselves and built the nation, the steam locomotive is the only one to have captured an almost universal affection. 5


4 H. L. Hamilton, from a speech given before Pacific Railway Club, Los Angeles, California, June, 1949.

The previous quotations illustrate the nostalgia for steam locomotives which caused a conscious and subconscious resentment of the diesel locomotive by many railroad employees. As this study will indicate, railroad personnel problems created by dieselization were complicated greatly by this emotional reaction.

Early History of Steam Motive Power

The history of the steam locomotive reflects a fascinating study of the relationship between engineering achievement and total social progress. For over 100 years, the major motive power on American railroads was provided by the steam engine. The steam locomotive powered its way through the lives of at least four generations of Americans, leaving its mark upon every section of the continental United States. As one author remarked: "She (the steam locomotive) unfurled the frontier, wheeled us toward a mass-production economy, took us to fight Spain, Germany, Japan, and - once - ourselves."\(^6\)

The steam locomotive owed its existence to a number of prominent inventors. The stationary steam engine, a 1705 invention of Thomas Newcomen, and James Watt's improvement upon it in 1769, established the technical basis for the development of the steam locomotive. Although various engineers experimented with the steam engine as a device for propelling vehicles in the intervening period, it was not until 1825 that the first successful steam locomotive was constructed. In 1825, George Stephenson, an Englishman, built his experimental vehicle "Locomotion;" in 1829, he constructed an improved version called the

\(^6\)Ibid.
"Rocket." These two steam-propelled motive power units were responsible for Stephenson's winning international acclaim as the inventor of the first successful "locomotives."

The first steam engine to run on American rails was an experimental model built in 1825 by Colonel John Stevens of Hoboken, New Jersey. However, this locomotive's operation was confined to a circular track on the colonel's estate and, consequently, never was utilized in commercial railway service. Of the first four English built locomotives brought to the United States, the "Stourbridge Lion" was the most publicized. The "Lion" arrived by sailing ship in May, 1829, and, subsequently, was given a trial run at Honesdale, Pennsylvania. The locomotive's weight was more than the track could bear, and thus it was converted to stationary operation. The first native-built steam locomotive employed on a United States common-carrier railroad was a pillar of early Americana, the "Tom Thumb." This locomotive, constructed in 1829 by the New York ironmaster, Peter Cooper, was given its trial run on the Baltimore and Ohio Railroad in September of that year. The Tom Thumb gained its greatest fame in August of 1830, when it lost a race to a horse-drawn carriage.

In December, 1830, the South Carolina Railroad's "Best Friend of Charleston" became the first locomotive to power a train of cars in regular American railroad service. Among other locomotives achieving fame in this early period of American railroading were the American built "West Point," "York," and "DeWitt Clinton," and the English constructed "John Bull."
Ultimate Development of a Mechanical Giant

Most of the early English and American built steam locomotives had only driving wheels, with no forward or trailing wheels to support the weight of the superstructure and frame. By 1831, however, a truck was placed under the forward end of American built locomotives to support their increasing weight. The basic early American class of steam locomotives was known as the "American" 4-4-0 series, the first of which was constructed in 1836 by James Brooks of Philadelphia. Not only did the American class of locomotives perform in an outstanding manner in the 1800's, but this design also served as the basis for the development of larger and more efficient steam engines of later periods.

By 1837, the weight on connected locomotive driving wheels was carried by equalizing beams which allowed each driving wheel to maintain vertical motion independent of the other wheels. In 1842, the introduction of the flexible beam truck permitted the various pairs of engine driving wheels to move in opposite directions, while their axles remained parallel to one another. This particular feature facilitated the rigid frame steam locomotive's negotiation of curved trackage. With such fundamental technical problems conquered, the way was cleared for the development of larger and more powerful steam locomotives.

Steam locomotives have been classified by their wheel arrangement, with the first digit indicating the number of forward wheels, the second digit indicating the number of driving wheels, and the third digit indicating the number of trailing wheels. Articulated steam locomotives have been identified by four sets of digits, with the two middle digits designating the two separate systems of cylinders and driving wheels. In the case of steam engines without forward or trailing wheels, the digit "0" has been used to indicate this fact.
The logistical problems of a young nation rapidly expanding its frontiers dictated the need for more powerful and efficient motive power on the American railway system. Thus the 4-4-2 "Atlantic" locomotive type evolved from the time-proven American 4-4-0 class. For a period extending from the middle 1800's until the 1950's, the Atlantic served as fast light power particularly suited to high-speed passenger operations. The late 1800's and early 1900's saw the evolution of such locomotive types as the general purpose "Mogul" 2-6-0 and "Ten Wheeler" 4-6-0, the light passenger "Prairie" 2-6-2, the standard passenger "Pacific" 4-6-2, the light freight "Consolidation" 2-8-0, and the standard freight "Mikado" 2-8-2.

However, the increasing traffic density on American railroads demanded even more powerful steam locomotives. The need for heavier motive power was met by such builders as Lima, American Locomotive, and Baldwin, as well as by individual railroads who custom designed and constructed locomotives in their own shops. This more powerful group of steam locomotives included the heavy freight "Berkshire" 2-8-4, "Decapod" 2-10-0, "Santa Fe" 2-10-2, and "Texas" 2-10-4, the heavy passenger "Hudson" 4-6-4, and the heavy dual purpose "Mountain" 4-8-2, "Northern" 4-8-4, "Southern Pacific" 4-10-2, and "Union Pacific" 4-12-2.

These latter types of locomotives provided the heaviest steam power possible with a rigid frame and set of connected driving wheels. However, still more power in a single locomotive unit was required. In order to attain this greater tractive effort in motive power, the articulated locomotive was created. The articulated locomotive consisted of one long boiler mounted on two separate-coordinated engines, each with
its own set of cylinders and driving wheels. This design (often referred to as a "Mallet") permitted a steam locomotive to have an extra long boiler and as many as sixteen drivers, and yet be able to negotiate all but the shortest radius curved trackage. The two engines concept of the Mallet provided enormous power in an economical manner, as the boiler steam was used twice. High pressure steam was fed directly from the boiler to the rear set of cylinders, with the resultant exhaust, in turn, utilized to power the front set of cylinders. The larger boiler of the articulated engine considerably increased locomotive tractive effort, since it combined the capacity for more steam with heavier weight on the driving wheels. The governing physical law states that the weight of the locomotive on its drivers provides the factor of adhesion necessary to permit the forces turning the drivers to pull the train. Thus the coefficient of friction between two smooth steel surfaces (wheel and rail) permits tractive power to be applied that will be equivalent to approximately 20 per cent of the weight on the drivers, if both the boiler and the cylinders are capable of producing a force of that amount.

The operating efficiency of later model American steam locomotives was increased greatly as a result of the development of three accessory systems. These systems involved the superheating of steam, the heating of feed-water, and the mechanical stoking of coal fuel. When steam was

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9 Ibid.
11 Ibid.
passed through small pipes located within the fire flues of the boiler, the temperature of the steam could be raised from 350 degrees or 400 degrees Fahrenheit to twice the previous temperature. The expanded superheated steam had greater pressure, thus reducing the amount of water required for conversion into steam, as well as reducing the quantity of fuel consumed. The amount of fuel required also was lessened by heating the feedwater as it was pumped from the tender to the locomotive. Exhaust steam from the cylinders (otherwise wasted heat) was used to heat the water before it entered the boiler. The heated feedwater reduced fuel consumption as much as 20 per cent. The mechanical stoker, developed as early as 1910, gathered and crushed coal in the tender, transported the particles by screw conveyor to the locomotive, and if properly controlled by the fireman, spread the coal evenly over the fire grate. In 1938, the Interstate Commerce Commission ordered that all new passenger locomotives weighing 170,000 pounds or more, and all new freight locomotives weighing 185,000 pounds or more, be equipped with mechanical stokers.\footnote{\textit{Ibid.}, p. 40.}

By the 1940's the \textit{steam locomotive} had been developed to a state of mechanical perfection, but its period of glory and domination of railroad motive power was soon to end. The diesel had reached the main-line, and its momentum would not be slackened until it had eliminated every existing unit of steam power. The finis was near for what many said was the most "magnificent" piece of machinery ever designed by man.
Early History of Non-Steam Motive Power

Although non-steam motive power never has had the romantic appeal of the steam locomotive, its history has been no less fascinating or dramatic. As indicated previously, the rise of the diesel locomotive was not meteoric. Various electric and gasoline driven motive power units were introduced and popularized before the encompassing diesel conversion took place. The prior utilization of these other types of non-steam motive power had a dual impact upon the development of the diesel. First, the experience of operating such non-steam power facilitated the design of a number of important diesel locomotive technical features. Second, the use of these non-steam units created some of the fundamental labor issues which later were to become the nucleus of the diesel labor dispute.

The Electric Motor Car

Non-steam railroad motive power was first used in the form of the electric motor car which derived its power from a third rail or overhead trolley system. The electric motor car has not been classified as a locomotive, since it was not designed to propel a lengthy train of cars; rather it was designed to operate as a self-propelled cargo or passenger carrying unit, with, perhaps, one or two trailer cars.

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Electric motor cars did not originate on line-haul railroads, although these common carriers have made extensive use of them. The electric motor car was first used by public transit companies on the streets, elevated trestles, and subways of major metropolitan areas. The first electric motor car was built by a blacksmith in 1835 at Brandon, Vermont. However, it was not until the dynamo was perfected in the late 1800's that the electric motor car was able to become prominent in interurban and line-haul railroad service.

The first successfully operated electric railway in the United States began operation in 1888 in the state of Virginia. Within twenty-five years of that date, there were 1,000 operating electric railroad systems in the nation, most of which were involved in metropolitan transit and interurban service. Interurban electric railroad companies featured high-speed passenger and light freight service within the geographical limits of major population centers. It was not until the turn of the twentieth century that the major line-haul railroads integrated the electric motor car into their scheme of operations. Then, as today, these units were confined to suburban-commuter service on the major American railroads.

Electricity as a Source of Locomotive Power

The first electric locomotives were introduced into American railroad operations in the early 1890's. The electric locomotive differed from the electric motor car in that it was designed to propel lengthy trains of revenue cars and did not have the capacity for carrying cargo or passengers within its superstructure. An electric locomotive, like
the electric motor car, did not carry its own power source but rather utilized plant generated power derived from a third rail or overhead catenary wire system.

Electric railroad systems typically generated electrical power at central plants and then transmitted the electricity at high voltage to substations, from which distribution was made to the catenary system at 11,000 volts. Current was drawn from the overhead wires by means of pantographs (collapsible contact devices) located upon the locomotive's roof. A third rail was sometimes used in lieu of the overhead wire system. The primary voltage obtained from the catenary system was stepped down by transformers in the locomotive to lower voltage (approximately 1,000 to 1,400 volts) and the current was then transmitted to traction motors geared to the locomotive's axles. The various electrical power systems in use on electric railways have differed in regard to the type of electricity generated. Some roads have employed direct current, while others have utilized alternating current as their energy source. Direct current traction motors had superior speed and torque (rotational force) qualities and thus were considered to be more efficient than alternating current traction motors.

Electric locomotives primarily have been used on heavily traveled main-lines. This condition may be traced to the economics of railroad electrification. Since the initial cost of railway electrification has been quite high, it has not been considered financially justifiable for low traffic volume operations. Because of the substantial investment
in power generating and carrying facilities, and the accompanying high level of fixed costs, a large volume of traffic was required to make railway electrification economically desirable.

The development of the electric locomotive was encouraged by smoke problems peculiar to the steam locomotive. For railroads confronted with local smoke abatement laws and long, difficult-to-ventilate tunnels, the electric locomotive provided a ready solution. The development of the diesel also gave the railroads a means of eliminating steam locomotive smoke problems.

Some railroad officials believed that dieselization would end the limited, but effective, use of electric motive power on American railroads; however, such has not been the case. In those cases where a high traffic volume could be maintained on electrified rail systems, the economies deriving from large scale operations, plus the lower initial and subsequent maintenance costs of electric locomotives made it more profitable to operate electric motive power than to operate diesels. The major barriers to electrification, however, have continued to be the relatively high cost of initially establishing the system and the maintenance of a high volume of traffic upon it. A significant group of major railroad executives, influenced by the previously mentioned electric railway advantages, by the rising costs of petroleum, and by the potential of commercial atomic power, now insist that economic considerations will dictate the eventual conversion of all diesel locomotives.

to straight electric motive power. The electric locomotive is not
dead and neither are the personnel problems which it influenced.

Internal Combustion Motive Power Makes Its Debut

Strangely enough, the evolution of the diesel locomotive owed a
debt of gratitude to the development of naval capital ship armament.
The turret-turning mechanism on the 1900-vintage United States battleship
"Kearsarge" employed a radically new kind of control known as the "Ward-
Leonard System." In this system, an engine-driven generator was con­
nected to a single motor which rotated the turret. The control of the
direction and speed of rotation was accomplished by varying the field
strength of the generator and motor. The principle of this operation
played an important part in the development of the gas-electric rail car,
the immediate ancestor of the diesel locomotive.

The rail car was the first form of railroad motive power to
generate power within the vehicle itself without the necessity of placing
fuel in a firebox. The unit was propelled in much the same way as an
automobile, with fuel being injected into the cylinders of the engine
by the driver. An eight-cylinder V-type gasoline engine was utilized
to drive a generator, which in turn powered electric traction motors on
the rail car’s axles. This was an application of the principle of
internal combustion to railroad locomotion, a technological achievement
which eventually would revolutionize American railroading.

15Ibid.
The gas-electric rail car was similar to the electric motor car in that it was designed to operate as a self-propelled cargo or passenger carrying revenue unit, with, perhaps, one or two trailer cars. When trailer cars were attached to the gas-electric rail car, the entire unit was classified as a rail car train. The first rail car was constructed in 1898, at Aurora, Illinois, by the Burlington Railroad. However, general use of rail cars on major line-haul roads dated from the year 1905, when the Keenan rail car was developed by the chief mechanical officer of the Union Pacific. Rail car popularity was on the decline by 1913, as railroad officials shifted their non-steam interest to electrification. This condition was due in great part to the difficulties steam engineers experienced in adjusting to the peculiarities and complexities of rail car operation. Railroad executives thus were exposed to the type of personnel problems which would be encountered when railroad operating crews and diesel motive power interacted.

The Rebirth of the Rail Car

By 1923, the railroads again were giving attention to the gas-electric rail car. The revival of railroad interest in the rail car was due to two major factors. First, the rail car was far cheaper to operate than even a short steam train. Due to increasing competition of busses and trucks, the branch rail lines were desperate for more economical means of operation. The general purpose rail car particularly was suited for such operations. A second reason for this renewed interest in the rail car could be traced to the impact of the low cost

\[17\] Ibid., p. 31.
automobile upon the nation. The influencing factor in this regard was not the competitive aspect of private auto transportation; rather, it was the national interest in the gasoline engine created by the increasing number of private automobiles. Although the older generation of railroad employees may have been repelled by the thought of internal combustion power, their lack of enthusiasm was more than offset by younger men completely enthralled with the operation of the gasoline engine.

Most of the embryonic rail car manufacturing companies, at the time, concentrated on efforts to place busses and trucks on rails. However, the more farsighted firm of Electro-Motive Engineering Corporation and its capable leaders, H. L. Hamilton and Richard Dilworth, saw little future in such a compromise. This firm intensified its efforts to develop specialized internal combustion railroad motive power, with the result that later, as a division of General Motors Corporation, it became the undisputed leader of diesel locomotive development and manufacture.

The resurgent rail car gained rapid popularity as a passenger vehicle on short lines on account of its economy of operation, high-speed schedules, and absence of soot and cinders. A number of streamlined trains that became prominent in railroad history simply were glorified rail car trains with diesel, rather than gasoline engines. In 1934, the Burlington Railroad placed into operation the first of its Zephyr trains, the "Pioneer Zephyr." In 1935, the New Haven and Boston and Maine railroads introduced their renowned "Comet" and "Flying Yankee" diesel-powered rail car passenger trains; the Union Pacific's "City of Salina" also entered service in that year. These early internal
combustion rail car trains gave Americana one of its most descriptive and memorable terms, that of the "streamliner."  

The success of the gas-electric rail cars caused the railroads to demand more powerful rail cars capable of pulling a large number of trailer units. Consequently, Electro-Motive increased the power rating of its rail cars from 175 to 400 horsepower. It was inevitable that the railroads would utilize these more powerful rail cars to pull not only passenger trains, but to propel freight trains as well. Except for strict technical definition, the rail car had qualified as a locomotive and had proven the value of internal combustion power for railroad locomotion. 

By the early 1930's, the development of gas-electric rail cars had encountered new barriers. It was technically impossible to increase the rail car's rated horsepower to the degree desired by the railroads; in addition, the cost of gasoline had risen to the point that the economies of rail car operation quickly were disappearing. The situation was ideal for the introduction of the diesel locomotive.

The Era of Dieselization

As indicated previously, dieselization was ushered into existence by the internal combustion rail car. In fact, it was the streamlined rail car passenger trains powered by diesel engines that actually introduced the era of the diesel in the middle 1930's. Diesel motive power had been in use prior to this period on American railroads, but it had

not been very successful in anything other than limited yard operations.\textsuperscript{19} The diesel engine was an 1897 invention of the French-born mechanical engineer, Dr. Rudolph Diesel. It was not until 1923, however, that Dr. Diesel's invention was applied to American railroad motive power. The first diesel-electric power unit, operated by the Central Railroad of New Jersey, was a sixty-ton vehicle capable of developing 300 horsepower in switching operations.

Diesel-electric motive power has utilized electrical and mechanical components in about fifty-fifty proportions.\textsuperscript{20} Mechanical and electrical forces have combined to produce the power necessary to rotate the diesel's wheels, and, hence, provide the tractive effort necessary for movement of the vehicle. The primary source of power for the diesel-electric locomotive has been the diesel engine, the most efficient internal combustion engine ever devised.\textsuperscript{21} The diesel engine developed mechanical horsepower which in turn rotated the armature of the main (traction) generator. Rotation of the main generator's armature through the generator's magnetic field resulted in the development of electrical power. The electrical power was transmitted from the generator via cables to the traction motors which, through a gearing assembly, rotated the diesel's driving axles.

Until the 1930's, the major obstacle to diesel locomotive development had been the excess weight and size of diesel engines capable of

\textsuperscript{19} John Walker Barriger, \textit{op. cit.}, p. 60.


\textsuperscript{21} \textit{Ibid.}
powering a train. This problem was conquered through another application of naval technology to railroad motive power. In 1932, a diesel engine for navy submarines was developed by General Motors under the direction of Charles Kettering. This 600 horsepower, two-cycle eight-cylinder diesel engine, with a weight of only twenty pounds per unit of horsepower, was compact and powerful enough to be utilized effectively by railroad motive power. The Kettering naval diesel engine was applied successfully to the streamlined rail car passenger trains introduced in 1934 and 1935. These early diesel-powered rail car trains were light in weight, but, due to articulation, also were totally inflexible. If diesels could be utilized only in light weight articulated rail car trains, it was readily apparent that complete dieselization would require rebuilding or scrapping every existing standard railroad car. Obviously, such action was too impractical to consider. The pattern which dieselization was to follow thus became clear. Independent diesel locomotives had to be constructed so that they could pull heavy trains of standard passenger and freight cars. Contemporary technological developments in diesel engines and traction motors had made this possible.

The Diesel Locomotive

The first diesel road locomotives were constructed within the confines of two steel boxcars; each had its own engine and a control cab

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22 In an articulated train each car is dependent for wheel support upon an adjoining car, and, hence, cannot be used separately in a standard train.
at one end. The two units coupled together provided a diesel locomotive with 3,600 horsepower. The boxcar shape was chosen by the builder, Electro-Motive Division of General Motors, because of its simplicity of design. However, this rectangular shape of the locomotive created two of the earliest dieselization personnel problems.

Steam engineers who operated these early diesels disliked the idea of being positioned in the front end of a high-speed locomotive. They missed the long boiler of the steam locomotive which they felt provided a protective shield for the crew, in the event of a collision. Front end control of the locomotive also tended to induce engine crew "sleeper flicker," a form of hypnosis resulting from watching ties pass under the front of the locomotive.

The previously mentioned problems of the boxcar shaped diesel dictated changes be made in the basic design of diesel road locomotives. A decision was made by Electro-Motive engineers to move the control cab up and behind a rounded nose. This one basic design change required that other major structural changes be made in the diesel locomotive. When the control cab was moved back over the front wheel truck to place it behind the locomotive's nose, the generator and diesel engine no longer could be positioned over the truck bolster and axle. Thus the

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24 Franklin M. Reck, op. cit., p. 63.

25 Ibid.

26 Ibid.
generator and diesel engine were moved to the center of the locomotive chassis, between the front and rear trucks. In order to support this weight, boxcar construction was abandoned in favor of a truss structure. Although it appeared that the small round portholes on the sides of diesel locomotives were a styling factor, such was not the case. These portholes were a result of the truss construction of the locomotive superstructure; the diagonal truss members did not permit large side rectangular windows to be used. This feature, however, made diesel engine room work even more undesirable for engine crewmen. The noise, heat, grease, fumes, and confining nature of the engine room of a moving diesel locomotive made it a disagreeable work environment. The small engine room porthole windows intensified the problem by allowing little light to filter into this dismal atmosphere. Since engine room maintenance has been a major issue in the dispute over diesel locomotive crew composition, this problem is discussed in detail in later sections of this study.

Electro-Motive design engineers determined that their firm would manufacture standardized diesel locomotives, adaptable, with minor modifications, to the requirements of any American railroad. However, a number of railroad executives were quite apprehensive about the use of standardized welded underframes on General Motors diesels; these officials were accustomed to the steam locomotive's one piece, solid cast-steel frame. Future operation of the standardized welded frame diesel locomotive proved such fears were unwarranted; the diesel was not prone to falling apart at the joints. Not only did the standardized diesel design reduce locomotive manufacturing costs, but it also
reduced the costs of in-service maintenance operations. When a diesel required routine maintenance or major repair on one of its component systems, standardized parts were readily available at relatively low cost. There were no costly unavailable part delays, as was often the case when replacement parts were required for customized steam engines. In addition, since the design of the diesel incorporated a number of complete standardized component systems, the defective system could be replaced immediately with a new or rebuilt system; the locomotive then could be placed back in service with only minor delay.

The initial series of diesel-electric road locomotives placed in service on railroads of the United States were 1,800 horsepower units constructed by the General Motors Corporation. In late 1935, these diesel locomotives were assigned to power the Baltimore and Ohio's "Royal Blue" and the Santa Fe's "Super Chief." However, it was not until 1940, that the first road freight diesels were placed in operation. These locomotives, consisting of four semi-permanently coupled diesel units generating 5,400 total horsepower, were assigned to the Southern and Santa Fe Railroads. As in the case of the first road passenger diesels, the manufacturer was the Electro-Motive Division of the General Motors Corporation. By 1940, both the diesel and General Motors were

27 John Walker Barriger, op. cit., p. 29.
28 Ibid., p. 60.
29 Ibid.
30 For a pictorial display of the first General Motors road service passenger and freight diesel locomotives, see: Franklin M Reck, op. cit., pictorial spread in center of text (unnumbered pages).
well on their way to overwhelming dominance of locomotion on railroads of the United States.

Whenever possible, components or materials familiar to veteran operating and maintenance personnel were incorporated into the design of the diesel locomotive, so as to minimize employee resistance to the new diesel technology. However, many components and materials that were used in steam locomotive construction could not be integrated effectively into the design of the diesel. For example, the steel used in diesel locomotive driving wheels had to be much stronger than the steel of the steam engine drivers. Since the diesel superstructure was positioned entirely over the wheels, small driving wheels were required to permit the diesel locomotive to negotiate low tunnels, sheds, and bridges. Because of their small size, the wheels of the diesel did considerably more work than their larger counterparts on the steam locomotive. Surprisingly, engineers seemed to resent the diesel's lack of the huge counter-balanced steam engine driving wheels. One converted steam engineer commented to the author: "The big driver gave me a feeling of confidence and power; it fascinated me too, and I really miss seeing it pound the rails under me." It is strange, indeed, how a diesel wheel simultaneously could create metallurgical and personnel problems.

Dieselization brought an era of flamboyant, brightly colored locomotives. The various railroads, apparently in unofficial competition for the most striking display, established their own unique diesel color

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31 Ibid., p. 65.
The vivid color combinations of diesel locomotives were in sharp contrast to the bleak standard black paint scheme of most steam engines. Of the eighteen engineers and firemen who commented about their feelings toward this diesel feature, seven were in favor of it for its aesthetic value, three resented it as an intrusion on the dignity of any railroad locomotive, three thought it was useful for warning-safety purposes, and five could not have cared less. The complete indifference of the latter group toward this diesel characteristic was significantly unlike the empathy displayed by engine crews toward any aspect of the steam engine. Regardless of whether the steam locomotive was painted in dull black or trimmed in gold and silver, the appearance of the engine was a source of considerable pride to its operating crew. In general, there appeared to be a lack of the identification between man and machine that had existed in the "steam era." Some former steam crewmen, in fact, seemed to be making a deliberate attempt not to identify with the diesel they were being "forced" to operate. At any rate, the explicit and implicit feelings of veteran steam crews toward the diesel were somewhat enigmatic.

Of thirty-three engine crewmen (engineers, firemen, and head-end brakemen) interviewed by the author in research for this study, fourteen stated a negative attitude toward the diesel, indicating they were not alone in their feelings. Each of these men, simultaneously, expressed


34Interviews conducted during period of October, 1961, through August, 1962. For a statistical tabulation of the steam-diesel power preferences of the thirty-three engine crewmen interviewed for this study, see Appendix B of this study.
a deep sincere affection and preference for the steam locomotive. This group of fourteen included one head-end brakeman, six engineers, and seven firemen; all had prior steam experience. Of the remaining nineteen engine crewmen interviewed, all expressed positive feelings and preferences for diesel power. This group was composed of three head-end brakemen, five firemen, and eleven engineers, with one of the engineers and three of the firemen having had no steam experience. Of this latter group of nineteen, excluding the four men with no steam experience, all but one engineer, one fireman, and two head-end brakemen viewed the steam locomotive in a favorable manner. The engineer did not like steam engines because he had been burned in a boiler explosion, the fireman felt steam engines were "too hard" work, and the two head-end brakemen did not like the dirt, cinders, and temperature conditions of steam engines. Each man interviewed, without prodding, expressed himself pro or con toward steam and diesel engines. Not one man expressed a neutral feeling toward either of the two types of power, nor was there any man who disliked both types of locomotives. (The men without steam experience were not asked to comment on their feelings toward steam engines.)

On an aggregate basis, excluding the four men with no steam experience, fourteen men (six engineers, seven firemen, one head-end brakeman) liked only steam locomotives, and four men (one engineer, one fireman, and two head-end brakemen) liked only diesels. Although eleven engine crewmen (nine engineers, one fireman, one head-end brakeman) who preferred diesels liked steam power, not one crewman who preferred steam power felt favorably toward the diesel. It is interesting to note that, of the men interviewed with both steam and diesel experience, the
majority of engineers and head-end brakemen had a positive attitude toward the diesel, while a majority of the firemen had a negative attitude toward diesel motive power. This condition probably can be traced to the fact that the diesel neither seriously changed, nor jeopardized the existence of engineer and head-end brakemen jobs. In addition, the diesel provided engine crews with a relatively clean, comfortable, and weather-protected work environment. Nevertheless, as indicated by several of the former steam engineers interviewed for this study, a number of engineers resented the diesel's displacement of their "beloved" steam engine. Even though the diesel reduced the workload, and provided an improved work environment for the fireman, it also drastically imperiled the security, satisfaction, and prestige of a fireman's job. Thus it is not difficult to understand the negative reaction of firemen to diesel power. This problem, along with other significant interview data, is examined in detail in later sections of this study.

Several engine crewmen, in spite of their strong statements, gave the author the impression that they expressed dislike for the diesel only because such a state of mind was currently in vogue among railroaders. There was also evidence that some railroad personnel who liked steam locomotives automatically rejected the diesel as the steam killer, without any other consideration involved. It was readily apparent, in observing the actions of certain locomotive crew members, that they held little esteem for the diesel. They spoke of it, at times, in obscene language, and, as evidenced by control cab appearance, treated the diesel as if it were a menace to society. In this regard, a personnel executive
of a major Eastern carrier stated that during the early phases of dieselization, his railroad experienced a number of cases in which engineers appeared to be deliberately attempting to "burn-out" diesel locomotives. A burn-out was caused by applying full power to a diesel locomotive with a heavy train, from a dead stop position. It never was proven conclusively whether such action was deliberate, a result of carelessness, or due to inadequate training. Research for this study would seem to indicate at least some burn-outs were deliberate expressions of resentment toward diesel power. Regardless of the cause, the burn-out problem became so significant, later model diesels were equipped with governors to protect the traction motors from destructive electrical surges.

Unique personnel and public relations problems were created by the sounds of the early diesel locomotives. Many steam engine crewmen apparently reacted quite negatively to the shrill diesel air horn. These crewmen particularly missed the "sentimental sounds" of the steam whistle. Thus a number of railroads converted their diesel air horns to air chimes, which provided "softer" sounds comparable to those of the steam whistle. A number of communities also clamored for a return to the traditional steam whistle. "It seemed that a baby awakened by a steam whistle was much easier to handle, than one awakened by a diesel air horn," one tongue-in-cheek railroad official commented to the author.36

35 Statement made to author by personnel executive of Railroad X, in interview conducted January 24, 1962.
36 Idem.
The operating sounds of a diesel locomotive's mechanism also created an unfavorable reaction among some engine crewmen. They missed the hiss, chug, and pounding characteristic of the steam locomotive. So pronounced was this problem, that one major Eastern carrier was rumored to have installed a steam sound effects machine in the control cab of a respected senior engineer's diesel locomotive. Although this rumor would not be substantiated by railroad officials, the following statement was made by a high-level training executive of the Eastern railroad concerned in a letter to the author:

... It was found that the situation (dieselization) was complicated by such things as: tradition, competition, age groups, lengths of service, work experience backgrounds, time limits, methods and procedures, habits, and even such things as sound effects.37

The Second World War gave considerable impetus to diesel conversion. War mobilization requirements demanded efficient locomotives capable of hauling heavy trains at high speeds; the diesel met these requirements. A rather peculiar situation created by the war effort also influenced dieselization. Steam locomotives required water in great amounts. For the Western railroads, in particular, this condition meant that critical tank cars had to be diverted from petroleum and chemical transportation, to "importing" water for steam locomotive operation.38 The increasing use of diesel locomotives released hundreds of tank cars for vital wartime cargoes.


A large number of diesel-electric freight locomotives have been equipped with an electric retarding brake system known as the dynamic brake. This braking system has utilized the diesel's traction motors as generators to create power for retarding the driving axles, instead of propelling them. In essence, the direction of the flow of current through the motors has been reversed to control the speed of the train going downgrade. The dynamic brake was designed to control downhill, a train of the same weight as the locomotive could pull uphill. Dynamic or regenerative braking could be compared to using second gear in an automobile to slow its descent on steep hills.

The use of dynamic brakes has eliminated certain problems of air braking freight trains on grades and curves. Contrary to popular opinion, freight trains equipped only with conventional air brakes (all steam powered trains, as well as some diesel powered trains) usually have required more time to proceed down steep grades than up the same grades. This condition has been caused by the excessive heating of brake shoes and wheels, a normal result of prolonged application of air brakes on trains moving downhill. Freight trains employing only air brakes to control their downgrade movement, have been required to stop for periods up to one hour to cool and inspect brake shoes and wheels. With dynamic braking, locomotives could hold trains to safe downhill speeds without the use of air brakes. In addition, after an application

40 Lucius Beebe, Highball, pp. 79–80.
41 Ibid.
of the dynamic brake, the locomotive could accelerate without waiting for air brakes to release throughout the train. Thus dynamic braking has provided a means of increasing average freight train speeds, while reducing costs of brake shoe and wheel repairs.\textsuperscript{42}

Until the early 1950's, all diesel locomotives were classified as either road or yard power. Yard diesels were short and relatively light horsepower units with a control cab on one end. These locomotives could move readily in either direction; some yard diesels had controls on both sides so that the engineer would not have to turn his head when reversing direction in switching operations. The engine mechanism usually was encased in a cowling accessible from open platforms on either side of the locomotive. Since the yard switcher normally operated near a terminal maintenance shop, there was no need for an enclosed engine room to facilitate engine repairs while en route.

Except for the initial series of rectangular shaped road diesels, all diesel road locomotives (passenger and freight) used in the 1930's and 1940's were identified by high control cabs, rounded noses, and enclosed engine rooms. The power ratings of these locomotives roughly varied between 1,500 and 2,000 horsepower, depending upon the builder and type of service involved. The term "Covered Wagon" has been applied to all diesel road units with enclosed engine rooms. Covered Wagons with control cabs have been known as "A" units, whereas those with no control cabs have been identified as "B" units. The "B" unit could be used in road operations only in conjunction with an "A" control cab unit.

\textsuperscript{42}\textit{ibid.}
However, the "B" unit contained a limited set of controls to facilitate its independent movement by a "hostler"\(^\text{43}\) within yards or engine service facilities. It was considered necessary to enclose the engine rooms of the early road diesels to facilitate en route maintenance of the diesel machinery. However, the locomotive manufacturers and railroads claim that modern road diesels do not require any en route maintenance. Thus late model road diesels do not have enclosed engine rooms. This most significant aspect of the diesel dispute is discussed in detail in later sections of this study.

The General Purpose Diesel

In the early 1950's, Electro-Motive under the direction of its chief engineer, Richard Dilworth, revolutionized the pattern of dieselization with the introduction of the General Purpose ("Geep") diesel locomotive. American Locomotive Company and Baldwin Locomotive Company also successfully introduced their versions of the general purpose diesel locomotive at this time. The original Geep was a 1,500 horsepower unit that could be used for either road passenger and freight service, yard switching, or local transfer operations. As one railroad

\(^{43}\)The term "hostler" has been used in railroad vernacular to identify yard employees responsible for moving locomotives between terminals (passenger and freight) and engine servicing facilities. In addition, hostlers often have had certain duties directly involved with locomotive servicing; these engine servicing responsibilities were particularly important during the steam locomotive era. For a complete discussion of hostler duties and jurisdictional rights, see: Award 16296, Docket 26421, National Railroad Adjustment Board, First Division, Chicago, Dispute between Brotherhood of Locomotive Engineers and the Union Pacific Railroad Company.
authority stated, the Geep was "ultimately functional." The Geep was distinguished further by the fact that like diesel yard locomotives, it had no enclosed engine room; its diesel machinery, covered only by a hood, was accessible from open catwalks on either side of the engine. Because the diesel machinery was encased only by an automobile type hood, the Geep also has been referred to as a hood diesel.

Not only was the Geep technical design unique, but the thinking behind its development was even more unusual. For some time, the various diesel manufacturers — American Locomotive-General Electric, General Motors, Baldwin, and Fairbanks-Morse — had been attempting, without much success, to develop a branch line diesel locomotive. Prevailing railroad practice had been to downgrade obsolete Covered Wagon road diesels to secondary or branch-line operations. The Electro-Motive engineers reasoned that if they designed a sufficiently "ugly" diesel locomotive, it immediately would be placed in branch-line service; no self-respecting railroad would want it to mar the appearance of main-line operations. By eliminating such things as covered engine rooms and non-functional frills, the price of the locomotive also could be reduced below that of the main-line diesel. Relevant to eliminating the covered engine room and placing the diesel mechanism under an automobile type hood, Richard Dilworth of General Motors commented as follows:

Aside from a few simple adjustments, we at Electro-Motive prefer and recommend to our customers, the railroad industry,

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That only qualified mechanics at a diesel repair facility should ordinarily work with the diesel engines, on generators and electric traction motors, the three essential working parts of a diesel-electric locomotive. The above concept had much to do with our thinking when we engineered the first general purpose hooded locomotive. By putting the diesel power plant and its appurtenances under a hood similar to that of an automobile, we contemplated that virtually all repairs and adjustments would be performed by mechanics at a diesel repair facility. Minor adjustments which are infrequent and sporadic can be more than adequately handled by the locomotive engineer.\footnote{Transcript of Proceedings of the Presidential Railroad Commission, p. 449.}

The considerations behind this statement, an obvious slap at union demands for diesel locomotive firemen, are discussed in detail in later sections of this study.

In order to ensure that the Geeps were assigned immediately to branch-line service, they were designed to give an instant response to the slightest movement of the throttle. An instant throttle response has not been considered desirable for locomotives powering long main-line trains. However, such an operating characteristic has proven useful for the short, frequently-stopping-and-starting trains, characteristic of branch-line operations. The basic technical and cost features of the Geep were so attractive to the railroads that, in spite of the builders' intentions, the Geeps were purchased for all types of engine service. Yielding to the desires of the railroads, the diesel manufacturers designed later model Geeps to be truly general purpose locomotives. By the early 1960's, the Geep hood-type diesel had become the design standard for all new American made diesel locomotives. Just as the Covered Wagon had displaced the steam engine, so had the Geep displaced
the Covered Wagon. It appears the Geep became the dominant form of diesel motive power because of four basic considerations.

First, and of the greatest importance, the Geep provided efficient economical service for either high-speed passenger runs, heavy freight drags, or yard-transfer switching. Second, lacking superstructure and frills, it was less expensive to buy and maintain than the Covered Wagon. Third, the hood diesel prevented machinery tinkering by inexperienced engine crewmen; simultaneously, it fortified the argument of the railroads that firemen were not required for en route maintenance purposes on road diesels. Fourth, obviously sensing the negative feelings of some former steam crewmen toward earlier model diesels, the builders designed the Geep with the engine crew in mind. The instant throttle response feature gave the engineer new faith and confidence in controlling the diesel locomotive. The control cab of the Geep was placed so that the hood encased machinery was behind, as well as in front of the engine crew. Regardless of the direction in which the locomotive was moving, there was superstructure ahead of the cab, just like the old steam boiler. A number of former steam engineers told the author that they much preferred the feeling of riding behind the engine mechanism, rather than directly in front of it.47 These engineers reasoned that the machinery housing ahead of the cab would provide protective shielding in the event of a head-on collision. The controls, arm rests, and seats of the Geep were positioned so that the crew comfortably could operate the engine in either direction. Even among the most reactionary diesel

47 Statements of nine former steam engineers obtained during informal interviews conducted by author during period of October, 1961, to August, 1962.
engine crew members, there was a frank admission that the railroads once again were powered by "real" locomotives. In spite of its negative impact upon union arguments concerning on route diesel maintenance, the introduction of the Geep appears to have had a positive effect upon engine crew morale. Dieselization, at that time, was in dire need of such a "shot in the arm."

A Comparative Analysis of Diesel Locomotive Technical Features and Their Impact Upon Railroad Personnel

In order to appreciate the underlying technical significance of dieselization, it is necessary to compare the major operating features of steam and diesel locomotives. The initial investment in diesel motive power has been, and continues to be high, with an average cost of $106 per unit of horsepower. This figure is more than twice the initial cost per horsepower of the steam locomotive. On a horsepower basis, diesels have been just as costly to operate as steam locomotives. The justification for investment in diesel motive power thus has been based on the efficiencies of diesel locomotive performance.

Although operating costs on a horsepower basis have been equal for steam and diesel operation, the diesel power plant has been far more efficient and productive per unit of horsepower expended. For example, a 4,000 horsepower diesel has been able to do the same job as a 6,000 horsepower steam locomotive.

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48 Statement made to author by personnel supervisor of Railroad X in an interview conducted August 20, 1962.

horsepower steam locomotive. This condition can be traced to the fact that diesel power plant operating efficiency has been rated at 35 per cent, as compared to an 8 per cent rating for the steam locomotive. Thus over four times as many heat units could be transformed into useful energy by the diesel as by the steam locomotive. Unlike the steam locomotive, the diesel engine, through automatic fuel injection, has produced its potential efficiency rating without the intervention of a fireman. With reasonable diligence, the engineer has been able to ensure the proper exploitation of this efficiency capability.

The diesel locomotive has had one very peculiar advantage over the steam locomotive in regard to fuel economy. Strangely, this particular economy feature has been applicable to the idle diesel locomotive. Due to certain technical characteristics of steam power, it was necessary to maintain a boiler fire in steam locomotives temporarily out of operating service. The fire of a steam locomotive normally was put out only for major maintenance work. However, the power plant of a diesel locomotive could be shut off at any time, without adverse effect upon either the diesel or electrical machinery.

The direct costs of diesel locomotive routine and major maintenance have been significantly lower than the costs of comparable steam locomotive maintenance. This cost differential can be explained, in part, by the following factors. The diesel locomotive has not required numerous fuel and water servicing stops between major terminal points.

50 Ibid.
51 Ibid.
Even early diesels were designed to operate for over 500 miles without refueling. In addition, diesel locomotives have not had the intricate side rods and valve gear which dictated frequent lubrication and adjustment stops for steam engines. Under normal conditions, diesels have been able to operate for distances exceeding 2,000 miles without routine maintenance; steam locomotives, however, usually required extensive routine maintenance after approximately 100 miles of operation. As a result of this condition, most steam engines were changed at 100 mile division point service centers. Since diesel-powered trains were not delayed by engine changes or refueling stops, such trains often achieved higher average speeds than their steam-powered counterparts. However, in terms of maximum speed capabilities, many late model steam locomotives were as fast, if not faster than their diesel replacements. This point is discussed further in later sections of this study.

In regard to major overhauls, the steam locomotive required such major maintenance after approximately 125,000 miles of service; on the other hand, diesel locomotives generally have received major overhauls after 500,000 miles or more of operation. Both the high quality of its component parts, and the technical nature of its machinery, have been chiefly responsible for the diesel's capacity to operate with less maintenance than comparable steam motive power required. It also should be noted that a significant portion of steam locomotive maintenance involved such tasks as washing the boiler and cleaning the firebox.

52 Lucius Beebe, Trains in Transition, p. 139.

53 Ibid.
These washing-cleaning operations were not attempts at beautification, but rather were vital to the continued efficient performance of the steam locomotive. Since diesel motive power required no elaborate periodic cleansing of its mechanical and electrical components, diesel maintenance efforts primarily could be devoted to lubrication or actual repair and replacement of defective parts.

 Obviously, the changed maintenance requirements of diesel motive power meant changes in the composition (quality and quantity) of locomotive maintenance shop personnel. In general, there was a shift in locomotive shop crew crafts from boilermakers and pipefitters to higher skilled machinists and electricians.54 Due to the diesel locomotive's capability to operate with less maintenance than the steam engine, locomotive maintenance shop forces were reduced in number as dieselization progressed.

 The diesel's elimination of routine locomotive maintenance at 100 mile intervals, adversely affected the small towns economically dependent upon such maintenance operations. The steam engine actually had been responsible for the development of towns as locomotive servicing centers. Dieselization eliminated the need for these maintenance centers, thus causing the disbandment of the facilities and operations

54 For a detailed discussion of steam locomotive maintenance operations and the specific duties of steam locomotive maintenance shop personnel, see: P. Ransome-Wallis, op. cit., pp. 439-452.
involved. In certain cases, the surrounding "railroad towns" virtually were wiped out, as their major source of employment and income was destroyed.\(^{55}\)

At the inception of dieselization, it was felt that the use of diesel motive power would reduce track wear and, hence, track maintenance costs. Track maintenance costs had risen excessively during the latter stages of the steam era. This condition primarily was caused by two technical features of the steam locomotive.\(^{56}\) Late model steam engines concentrated tremendous weight upon relatively short wheelbases. The impact of this feature was intensified by the hammer-like blow of the steam locomotive's huge counterbalanced drive wheels. The diesel locomotive, however, spread its weight over a longer wheelbase, and it had no reciprocating parts to hammer at the rails. In addition, the less rigid wheelbase of the diesel (each wheel truck could turn independently) held the locomotive's pressure against curved rail to a minimum.

According to one railroad official, dieselization, nevertheless, has not reduced the total costs of track maintenance.\(^{57}\) In fact, it appears that current track maintenance costs are as high as they were during the period of steam operations.\(^{58}\) This condition probably has

\(^{55}\)For a detailed discussion of the social and economic impact of dieselization upon small towns built around steam locomotive maintenance operations, see: W. F. Cottrell, "Death by Dieselization: A Case Study in the Reaction to Technological Change," American Sociological Review, June, 1951, Vol. 16, pp. 358-365.

\(^{56}\)John Walker Barriger, \textit{op. cit.}, pp. 27, 29.

\(^{57}\)Statement made to author by track maintenance official of Railroad Y, April 25, 1962.

\(^{58}\)Idem.
resulted from the high sheer stresses placed upon the track by exceptionally long multi-unit diesel powered trains, operating at sustained high speeds. Thus any recent reductions in the total number of track maintenance personnel likely can be explained in terms of automation, rather than of dieselization.

One of the most important technical features of diesel motive power has been its multi-unit control capability. Whereas each steam locomotive in a train required a separate crew, any number of diesel power units could be coupled together and operated by one engine crew. The problem of the various steam crews coordinating their engines limited the number of steam locomotives used to power a train. Only two or three steam engines ("double-heading" or "triple-heading") normally could be used in one train. Occasionally, a particularly steep grade dictated that a fourth, or even fifth, steam locomotive be cut into the middle or end of the train.

The limitation on the number of steam engines that could be operated together, obviously restricted the number of cars in steam powered trains. This fact had a significant impact upon steam powered freight service. Because of slower schedules, no passengers to disturb in taking up coupler slack, and the availability of large cargoes, freight trains often have had the opportunity and economic justification for extensive length. The multi-unit control capability of the diesel gave the railroads a chance to take greater advantage of the economies of scale deriving from operation of lengthy freight trains. Since any number of diesel power units could be operated together and controlled by
one engine crew, there has been virtually no limitation on train size from the standpoint of diesel locomotive technology.

The diesel locomotive's multi-unit control capability also has been of importance in passenger service, but not for the reason that it permitted longer trains. Since the length of passenger trains generally has been governed by the amount of mail, express, and passengers to be carried (freight trains always have consisted of a large number of empty cars being returned to their owners), passenger trains rarely have carried over twenty cars. A fifteen-to-twenty-car passenger train usually required two heavy double-headed steam locomotives. Starting and acceleration of the train with two such independently controlled steam engines, caused a disturbing jolt of the passenger car consist. This problem was alleviated to a great degree through the use of multi-unit diesels controlled by one engine crew.

The multi-unit control capability of diesel motive power created some significant personnel problems. The most serious of these problems revolved around the fact that with a given volume of traffic, the use of multiple-unit diesel locomotives resulted in longer trains, and, therefore, a reduction in the total number of trains (particularly freight trains). This condition, in turn, caused a reduction in the total number of jobs available for engine and train crews. The manner in which engine crewmen and their unions reacted to this problem is discussed intensively in later sections of this study.

In regard to train crew (conductors and brakemen) reaction to the job-cutting potential of multiple-unit diesels, only the brakemen seemed to take direct action in the matter. The conductors apparently chose
not to seek assistant or extra conductor positions on lengthy multi-unit diesel-powered trains. Since the conductor traditionally has been in charge of a train and its cargo, long trains have tended to create an excessive managerial workload for the conductor, especially in regard to paperwork. It appears the conductors could have utilized this condition as a basis for demanding the assignment of assistant conductors to lengthy diesel-powered trains. For some unexplained reason, the conductors have not demanded such extra crew positions. In this regard, the conductors have differed from other crafts comprising engine and train crews. The engineers, firemen, and train brakemen have sought extra crew positions on multiple-unit diesel-powered trains, to ensure adequate employment opportunities for their crafts during the diesel era. Extra conductors have been used, at times, on long passenger and freight trains. However, these conductors have been assigned to such trains by management for train control purposes, and not because of direct union pressures.

The brakemen have made a concentrated effort to protect their jobs from the effects of train-cutting multi-unit diesel locomotives.

59 The conductor's paperwork on a freight train primarily has consisted of keeping records on the various cars of the train. These records have included data on car ownership, origin, destination, cargo, and special handling, if required. On passenger trains, the conductor's paperwork has included the collection and accounting of tickets and cash fares as well as the maintenance of records on the origin and destination of the passenger cars. In both freight and passenger service, the conductor always has had the final authority and responsibility for train movement and train safety. Thus, whenever possible, he has been expected to observe the operating condition of the train and right-of-way.
However, only train brakemen have been involved in this action. Using obsolete state full-crew laws as a basis, the brakemen labor organizations have been moderately successful in gaining the assignment of extra brakemen to long diesel-powered freight trains. The head-end brakemen, traditionally considered as members of freight locomotive crews, have not sought extra positions on any type of diesel motive power. This point is discussed in detail in a later section of this study.

Prior to the advent of the air-brake, each car in a train had to be braked independently by a brakeman, before the train could be safely slowed or stopped. Brakewheels on the car ends that activated mechanical brakes were used for this purpose. Since the brakemen had to run between the cars (using the car roofwalks) to set or release the brakes, a long train required numerous brakemen. In order to ensure that the railroads assigned a sufficient number of brakemen to each train to safely brake it, a number of states enacted full-crew laws. These laws stipulated the number of brakemen that were to be assigned to trains of varying lengths. After the development of the air-brake, such laws became obsolete, as complete train braking was controlled by the engineer from the locomotive cab. However, despite the use of the air-brake, the full-crew laws continued to remain in effect in many of the states concerned, primarily as a result of union pressures. The brakemen unions viewed the state full-crew laws as a means of protecting train brakemen positions from the job-cutting effects of more powerful locomotives. For a more complete discussion of this subject, see: A. Holmes Fetherolf, "Can Featherbedding Be Brought to a Stop?" Steelways, Nov., 1959, Vol. 15, No. 5, pp. 5-8. For a general discussion of state full-crew legislation, see footnote 38, Chapter III, of this study.
One of the more unusual personnel problems influenced by multi-unit diesels involved the safety of freight train rear-end crewmen. Under normal operating conditions, the conductor and rear-end brakeman have been assigned to the cabin or caboose car at the end of the train. Thus these crewmen have been subjected to the hazardous effects of "slack action." Slack action has been the terminology used to describe the slamming of cars into each other, as a result of train acceleration or deceleration forces being exerted upon coupler-drawbars. Since the coupler-drawbars have been sprung to facilitate train acceleration and to reduce shock effects upon the car and its contents, it has not been technically possible to eliminate slack action. Most coupler-drawbars have been sprung in such a manner that one foot of slack has existed between two coupled cars. Therefore, when the first car stopped, the second car would roll one foot before slamming into the first car. The slack action or "free motion," accordingly, for the last car of a 200 car freight train has amounted to approximately 200 feet.

Since the caboose normally has been the last car in a freight train, it has been subjected to the severest slack action in the train. Those crewmen riding the caboose (conductor and rear-end brakeman) obviously have been subjected to the shock effects resulting from such slack action. During research for this study, the author had occasion to experience the impact upon the caboose of slack action in a 180 car diesel-powered freight train. The author was prepared for the impact of the thundering slack action, and, yet, was thrown to the floor of the caboose.
This experience indicated that even crewmen prepared for slack action in the cabin car of a long freight train, might be injured in the process. It also appeared the chances of slack action injuries to rear-end trainmen would increase drastically with significant increases in freight train length. Interstate Commerce Commission statistics presented to the Presidential Railroad Commission seem to support the previous conclusions. According to the statistics, during the period of 1931 to 1935, with freight trains averaging forty-four cars per train, the slack action accident rate was 3.4 accidents per 1,000 employees per year; during the period of 1954 to 1958, with freight trains averaging sixty-eight cars per train, the slack action casualty rate had increased 65 per cent to 5.6 accidents per 1,000 employees per year. It must be assumed that most of those injured were prepared to some extent for the "slack shock." All train crewmen are informed about slack action shock effects and how to prepare for them. In addition, just one instance of subjection to such a shock would make any rational person cognizant of the importance of slack action precautions. It appeared to the author that the best preparation for slack shock was to be off the train when it occurred. Since an accelerating train would move the cabin car slowly for a short period, the rear-end crewmen could jump back on the car before the train reached high speed. It would be difficult, however, for crewmen to jump from a moving cabin car to avoid the shock effects of train deceleration slack action.

Modern multi-unit diesels, with their capability to power exceptionally long trains (200 or more cars are not uncommon in contemporary multi-unit diesel-powered-freight trains), have made slack action a greater safety problem than ever. Coupler-drawbar breakage problems also have become more severe with the operation of long multi-unit diesel-powered freight trains. It is interesting to note, once again, how machine technical operating features, simultaneously can create or aggravate engineering and personnel problems. In order to overcome slack action injury problems, some individuals have advocated placing the cabin car nearer the front or middle of the train. However, moving the cabin car from the rear of the train, would defeat its basic purpose of housing crewmen with train rear-end responsibilities.

The Southern Railway apparently has found a novel way to conquer slack action injury problems. Southern officials simply decided to eliminate the use of cabin cars, and, accordingly, to place all train crewmen in the cabs of locomotives. It is apparent the Southern's primary motive in removing the cabin cars from freight trains, has been based upon a desire to facilitate the removal of rear-end brakemen from freight service. Without cars to ride in, rear-end brakemen just could not be assigned to freight trains. Southern officials have justified their actions in the "caboose affair" by stating that a cabin car and rear-end brakeman are not required in modern freight railway operations. The Southern has implied, therefore, that modern railway train control technology has made the rear-end brakeman obsolete.

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The author's research, however, indicated that long multi-unit diesel-powered freight trains have made human observation of a train's mechanical operating condition more important than ever. It appeared to the author that such train observation could be accomplished most effectively by requiring a crewman to observe the train from a rear-end cabin car, as well as from the locomotive.

It is acknowledged that the high sustained speeds of lengthy diesel-powered freight trains have increased the chances of mechanical failures of freight car equipment; this condition has been especially apparent in the case of freight car overheated wheel-truck bearings. The author believes the relatively large number of "unexplained" recent diesel-powered freight train accidents in the United States, in part, can be "explained" by the failure to detect such freight car mechanical breakdowns as overheated wheel truck bearings, dragging brake shoes, derailed wheels, and damaged coupler-drawbar connections. It seems the answer to this problem lies not in eliminating freight train brakemen but rather in assigning additional brakemen to exceptionally long freight trains. This viewpoint conceivably could dictate placing a cabin car and brakeman at the middle, as well as the rear of such trains. The necessity of observing a train's mechanical condition while en route is examined further in a later section of this study.

From the previous discussion, it is clear that the diesel locomotive had certain peculiar effects upon railroad train crew members.

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64 John Walker Barriger, op. cit., p. 25.
In order to learn how this group of railroad employees felt about diesel motive power, forty train crewmen were interviewed during the research for this investigation. Of the group of forty, twenty-four were brake-men-trainmen, and sixteen were conductors. All of the conductors had both steam and diesel experience. However, eight of the brake-men-trainmen had served only on diesel-powered trains. All forty of these men viewed diesel motive power favorably. Not one of the group who had steam experience preferred service on steam-powered trains to service on diesel-powered trains. However, all but three (two brake-men-trainmen, one conductor) of the thirty-two men with steam experience personally liked the steam locomotive.

The twenty-nine train crewmen who liked steam power indicated the demise of the steam engine was a most significant loss to American railroading. Five of this group of twenty-nine independently told the author that they felt many of the labor and morale problems of contemporary American railroading would not exist, if steam motive power was still on the scene. They implied that the steam locomotive, with its inherent ability to captivate men, was a morale rallying point for all employees of the railroad industry. The way these crewmen expressed it, a disgruntled railroad employee could identify and communicate with a steam engine, and, thereby gain a renewed faith in his job. The author recalls an instance, some years ago, of seeing an engineer actually speak to a steam engine, and act in return, as if the engine was

65 Interviews conducted during period of October, 1961, through August, 1962. For a statistical tabulation of the steam-diesel power preference of the forty train crewmen interviewed for this study, see Appendix B of this study.
speaking to him. It must be admitted that the mystical sounds emitted by a steam locomotive could be interpreted in many ways.

Nevertheless, in spite of all of the proclaimed sentimental feelings and attachments toward the steam engine, everyone of the train crew members interviewed preferred serving on diesel-powered trains. This preference primarily was based upon the belief that diesel power was cleaner, less troublesome, and generally more dependable than steam power. Those train crew members with passenger service experience, specifically mentioned that diesels accelerated trains much smoother than did steam engines. However, those crewmen with diesel freight-service experience did not hesitate to point out the increased responsibilities and slack action dangers associated with long multi-unit diesel-powered freight trains.

It is interesting to compare the views of engine and train crewmen toward diesel motive power. The most significant aspect of such a comparison is the fundamental difference in view between those who operated the locomotives (engine crew members) and those whose jobs were affiliated functions of locomotive operations (train crew members). The engine crew members seemed to enjoy conquering the challenges of steam engine operation, whereas the train crew members preferred ensured smooth train performance. In short, to make their own jobs more desirable, train crew members preferred the most efficient locomotion possible, regardless of the type of power utilized. It is apparent, therefore, that those employees who operate machinery may view it in a manner totally different from those employees merely associated with the machinery's operation.
There is no doubt that engine and train crew wage payment plans have been affected by dieselization. Although dieselized operations have invalidated certain traditional engine and train crew pay standards, this has not occurred to the extent some labor and management officials have claimed. In many cases, traditional methods of computing engine and train crew wages were made obsolete through the development of faster and more powerful steam locomotives. Since these obsolete wage computation methods and standards remained in force until the diesel era, dieselization received the blame for invalidating traditional railroad wage plans.

In respect to multi-unit diesel operations, however, dieselization did have a serious effect upon the validity of traditional engine and train crew wage schedules. As pointed out previously, the use of multi-unit diesels resulted in trains of far greater length than steam power had permitted. These lengthier trains placed greater skill requirements, responsibilities, and workloads upon both engine and train crews. Thus new schedules of graduated rates of pay based upon locomotive horsepower and train length were required by dieselization. The development of these graduated wage plans and other wage standards realistic for modern dieselized operations, is not, however, within the scope of this study. 66

By 1960, dieselization of railroads of the United States was virtually complete, nearly forty years after the first diesel locomotive had been placed in service on American rails. Such coal-carrier railroads as the Chesapeake and Ohio and Norfolk and Western, had resisted dieselization to the end, in a last ditch attempt to make the steam locomotive the zenith in railroad motive power development. The economics of diesel performance prevailed, however, and the diesel became undisputed king of locomotion on the nation's railroad system.

The late model diesel locomotives hardly resembled early diesel motive power, either in appearance or performance; only the fundamental technical principles of electro-mechanical (diesel-electric) operation remained the same. The standard heavy diesel locomotive in production during the mid-1960's carried a performance rating in excess of 3,000 horsepower. By 1966, General Motors had placed single unit diesels of 6,000 horsepower in service; these locomotives had over three times the power rating of the initial series of diesel road locomotives manufactured by General Motors in the 1930's.

By 1960, the Covered Wagon road diesel had become history as far as the diesel locomotive manufacturers were concerned. As of that date, all models of diesel locomotives on the production lines and the drawing boards were of the hood Geep design. There was no longer a need for enclosed engine rooms on road diesel locomotives, as improvements in diesel design virtually had eliminated en route engine maintenance requirements. The personnel implications of this aspect of diesel locomotive development are examined in detail in later chapters of this study.
One railroad authority has commented that railroad management generally has not been able to elevate the standards of the rest of its physical plant to the capability level of diesel motive power. This, of course, refers to the inability of management to develop other areas of railroad technology to the efficiency level of the diesel locomotive; thereby, the carriers have not been able to exploit the complete potential of diesel locomotion. However, this authority also might have stated that neither has railroad management been able to elevate itself or labor to the capability level of diesel motive power. Herein lies the real crux of the problem of diesel locomotive utilization on American railroads. The remaining chapters of this study attempt to investigate the significance of this point.

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67 John Walker Barriger, op. cit., p. 25.
ORIGIN OF THE NON-STEAM LOCOMOTIVE CREW DISPUTE

A Traditional Dispute

Although the argument over locomotive crew requirements has received extravagant publicity in the last few years, the issues at stake are far from new. In fact, they trace their origin to the earliest days of steam motive power. The advent of the diesel locomotive, however, served to intensify the problem to the point where it became one of the severest management-labor disputes of the contemporary period.

In order to appreciate the span of time over which locomotive crew duties have been controversial, it is interesting to note that the first recorded instance of a fireman "featherbedding" occurred in 1830 on the South Carolina Railroad. This case involved the first successfully operated American-built steam locomotive. The fireman in question was attempting to lessen the noise of blowing off steam, and,

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1 The term "featherbedding", according to legend, originated in the early 1900's on the Rock Island Railroad. A group of Rock Island employees complained about their cornhusk mattresses and were answered by the trainmaster, "What do you want - featherbeds?" Since then, the term has been used to describe employee make-work and work slow-down practices. For further reference on this subject, see: A. Holmes Fetherolf, "Can Featherbedding Be Brought to a Stop?" Steelways, November, 1959, Vol. 15, No. 5, pp. 5-8.

simultaneously, reduce his fuel shoveling workload by holding down the boiler safety valve. This action by the fireman did succeed in reducing the noise and building greater steam pressure with less fuel, but it also caused the locomotive to explode. From such "humble" beginnings evolved the current controversy over diesel engine crew composition. Understanding of this dispute can be enhanced by an analysis of the historical development of locomotive crew operating responsibilities. Such an analysis logically must start with the "steam era."

Duties of the Steam Locomotive Crew

The evolution of railroad motive power has had its most drastic impact upon the tasks of the locomotive fireman. Although the locomotive engineer always has been the "hero" of railroading to the layman, an analysis of steam fireman duties reveals the unsung martyr of the industry. The job of the "smoke agent" (fireman) entailed far more than shoveling coal. In fact, shoveling coal was incidental to keeping the engine hot and powered.

The task of shoveling coal was mere physical labor. The spreading of the coal in the process, however, required considerable skill, acquired only through intensive practice and experience. It was necessary that the fuel be placed in the corners of the firebox first, and

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then spread evenly to those points where the fire appeared brightest. The opening of the firebox for insertion of coal created one of the most difficult problems in firing a locomotive. If the fire door was left open too long while coal was inserted into the firebox, large quantities of cold air would enter; this condition would reduce the heat of the fire and lower the temperature of certain points of boiler plate. Uneven contraction from the sporadic chilling of the boiler could cause major leaks in the boiler and its accessories.

With the advent of stoker fired locomotives, the problem of the open fire door was eliminated. However, the stoker dictated the development of new fireman skills. As the coal was moved by conveyor from tender to locomotive, the fireman manipulated streams of jet air to shoot the coal into the firebox. Considerable skill was required to ensure the coal was spread evenly over the firebox, so as not to smother the fire.

The fire of a steam locomotive burning soft coal required much more frequent attention by the fireman than did the fire of a steam engine using anthracite. The key to higher steam pressure and successful firing of soft coal burners was to place small amounts of coal on the fire at frequent intervals. As the tonnage hauled increased, the amount of coal consumed by the locomotive increased as well. On larger engines with heavy tonnage trains, it was not uncommon for a fireman to shovel twenty to thirty tons of coal on a single trip.

As if stoking the fire was not enough, the fireman had other important duties to perform on the steam engine. It was his
responsibility to maintain the proper water level in the boiler. If the water level fell too low, the boiler could burn and possibly explode. If the water level rose too high, wet steam would enter the cylinders and, correspondingly, reduce engine power. In addition, every experienced fireman knew that timing the insertion of boiler water was as important as maintaining the correct water level. Since cold water lowered steam pressure when it entered the boiler, the fireman, particularly on fast passenger runs, had the obligation of injecting water only when the engineer had closed the locomotive throttle. This action meant steam pressure would be diminished when steam was not being used by the engine, rather than when the engineer was counting on full pressure to maintain speed and power. Of course, constant coordination between engineer and fireman was necessary to carry out this operation. It was also the fireman's job to control the steam jet blower which produced a forced draft to keep the fire "hot."

While the engine was standing, the fireman had the responsibility of lubricating the side rods and pins and of constantly checking for any sign of mechanical malfunction. Although it would seem that the fireman was kept quite busy merely maintaining steam, he, nevertheless, had other unrelated duties to accomplish while en route. He performed the often dangerous task of aiding the engineer in spotting the tender under the water scoop, and then controlling the flow of water into the tender's tank. The fireman was responsible for ringing the locomotive bell, while moving over grade crossings and through the yards, a sort of pleasurable-nuisance task. No experienced fireman would dare ask his engineer to reduce speed to pick up train orders; thus picking up orders
"on the fly" at speeds of forty-five to fifty-miles per hour was common for many of those who rode the left side of the cab. All firemen were expected to maintain a lookout to the left side of the boiler and check signals with the engineer. The previous fireman duty and its implications, are analyzed in detail in later sections of this study devoted to the locomotive fireman lookout-safety function.

The fireman's tasks on an oil-burning steam engine were essentially the same as on a coal burner. The operation of feeding fuel oil to the engine was similar to controlling a stoker on a coal fired locomotive. In either case, the fuel had to be sprayed evenly into the firebox. The fireman servicing the oil burning locomotive had an important precaution to observe. If he allowed his oil to get too hot, it would boil over and flow down the sides of the locomotive to the rails. This condition, in turn, set the stage for a following train to slip and flounder when it reached the well oiled rail.

It is obvious that the fireman was as important to a steam locomotive as was its fuel carrying tender. His job was dirty and laborious, but always characterized by challenges. Coal dust, noise, fumes, cinders, and intense heat were accepted annoyances. The work was extremely fatiguing, but, nevertheless, required constant vigilance and exercise of critical skills. Errors in firing meant potential physical danger to the engine crew, possible destruction of expensive machinery, or at best, inability to meet train control schedules. Inconvenience in accomplishing his work appeared to be expected by the steam fireman, not resented by him.
The firemen interviewed by the author who had served on steam engines, with one exception, voiced some degree of affection for the steam locomotive. As discussed in the previous chapter, of the nine firemen who had serviced steam engines, all but two indicated negative feelings toward the diesel, reserving their favor in total for the steam locomotive. One of the firemen who expressed a preference for diesel power, nevertheless, expressed considerable affection for steam service. He stated that, though the diesel fireman role was cleaner and simpler, the steam locomotive presented him with a challenge which could be overcome only through his personal skill and perseverance. All nine firemen with steam experience agreed the steam engine made them feel needed, whereas this was a questionable feature of the diesel. It appeared to the author that what these firemen were saying had a twofold meaning. First, and, perhaps the more obvious implication, was that the steam locomotive made the fireman a very important element in the nation's transportation system. Second, the halo of job insecurity that has characterized the diesel fireman's role from its inception, significantly hindered fireman acceptance of the diesel locomotive.

Out of a total of twelve firemen interviewed for this study, only five expressed positive feelings toward the diesel; of the group of five, only two had steam experience. A former steam engineer commented to the author on the favorable reaction to the diesel of the remaining firemen.

three firemen, "And so how are they to really know!" This remark implied a philosophic view echoed frequently in the interviews for this study, that after an engine crewman was exposed to the "steamer," it was very difficult for him to look favorably upon any other form of motive power.

In accordance with the traditional discussions of personnel problems resulting from technological change, the simpler and more convenient diesel work tasks (these tasks are discussed in a later section of this study) were viewed unfavorably by many firemen. This condition was due to the fact such tasks simultaneously reduced the status, challenges, skills, operating habits, and job security of the firemen that performed them. However, management also should recognize from the diesel dispute, the significance of aesthetics and sentiment relevant to obsolete machinery and the ensuing employee resistance to technological change this factor can create. As pointed out in the previous chapter, the steam locomotive was regarded highly by crew members, because of its mechanical beauty and dominant role in "Americana." Even such seemingly minor features of machinery as associated sounds (hiss, chug, whistle, and ring) were regarded sentimentally in the case of the steam locomotive.

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5 Comment made to author by senior engineer of Railroad X on July 15, 1962.

The experience of the diesel dispute makes clear the importance of considering, in managerial planning for technological change, aesthetic and sentimental values attached to displaced machinery. It is apparent that in the case of the diesel, engine crew acceptance of this new type of motive power was hindered by employee affection for the obsolete steam engine. Research for this study, however, failed to reveal any effort by railroad management to consider, in diesel conversion plans, this aspect of employee resistance to technological change.

No attempt is made at this point to delineate specifically the duties of the steam locomotive engineer. Although locomotive power has changed from steam to internal combustion and electricity, the basic operating tasks and responsibilities of the locomotive engineer have remained virtually the same over the years. The peculiarities of the various types of locomotives have required, of course, some adjustment in specific operating procedures, for engineers shifted from steam to electric or diesel engines. Perhaps the greatest change in the job of the locomotive engineer, during the transition from steam to diesel and electric power, has involved interaction patterns of the engineer and fireman. In any case, the introduction of electric and diesel motive power has not jeopardized the job security of the engineer, as such. However, the multi-unit diesel has reduced the total number of job opportunities available to engineers. These points are discussed in detail in later sections of this study.
Uniqueness of the Non-Steam Engine Crew Dispute

The groundwork was laid for the non-steam locomotive crew manning dispute in 1895, when the Baltimore and Ohio placed the first electric locomotive in American railway service. After considerable experience with electric power in street railway operations, the development of the electric locomotive was a normal stage of technological evolution. However, it introduced a locomotive crew manning controversy that has caused a most abnormal state of management-labor relations ever since for the American railroad industry.

"Abnormality" must describe a state of labor relations which has been unstable over the same basic problem for seventy years, despite a number of mediated and arbitrated formal "agreements" covering the disputed issues. Even with the November 26, 1963, decision of a congress-appointed compulsory arbitration board that 90 per cent of the diesel freight and yard firemen jobs could be eliminated (approximately 35,000 jobs), and a United States Supreme Court ruling on April 27, 1964, upholding this decision, the problem remained unsettled. The arbitration board's ruling initially covered the two-year period of January 25, 1964 to January 25, 1966, with labor free to renegotiate the diesel firemen issue after that date. However, because of a union appeal of the arbitration award to the Supreme Court, as well as technical problems

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9 231 F. 2d 1020 (1964); 377 U. S. 918 (1964).
of implementation, the ruling was changed to cover the period of April 1, 1964, to March 31, 1966.\textsuperscript{10} Citing the original date of January 25, 1966, Charles Luna, President of the Brotherhood of Railroad Trainmen stated:

On that night there could well be chaos and confusion on the rail lines. Because on that night our Brotherhood will expect the railroads of the land automatically to rehire all men they've laid off in this battle over the two years between January 25, 1964, and the 1966 date. At that time I will represent my men on the job and off the job. We will take action.\textsuperscript{11}

According to labor columnist Victor Riesel, "action" would mean a strike if the laid-off men were not returned to their jobs at the end of the arbitration period.\textsuperscript{12} In a New Year's message to his membership, H. E. Gilbert, President of the Brotherhood of Locomotive Firemen, stated that the firemen would back the stand of the trainmen on this issue.\textsuperscript{13} He indicated to the firemen they should prepare for 1966, at which time the Congressional Arbitration Law would expire.\textsuperscript{14} It was Gilbert's position that after the expiration of the Congressional Arbitration Board's ruling in 1966, the union would be free to strike, if necessary, to restore firemen jobs eliminated under the arbitration law.\textsuperscript{15}

\textsuperscript{10} James R. MacDonald, "Death of a Union?" The Wall Street Journal, March 1, 1965, pp. 1,8.


\textsuperscript{12} Ibid.

\textsuperscript{13} Ibid.

\textsuperscript{14} U. S. News and World Report, January 11, 1965, p. 72.

\textsuperscript{15} Ibid.
The most significant aspect of the previous threatening union statements was the prominent involvement of the Brotherhood of Railroad Trainmen in the matter. Although some excess train brakemen were imperiled by the Congressional Arbitration Board's ruling, firemen held the great bulk of the positions directly affected by the Board's decision. This was the strongest support the Brotherhood of Locomotive Firemen ever had gained from another railroad union in the course of the diesel crew dispute. Undoubtedly, the behind-the-scenes maneuvering that brought about this particular unified labor challenge was based on the railroad unions' resentment and fear of the government sponsored compulsory arbitration law; the unions, of course, believed their position would be enhanced through collective bargaining of disputed labor issues. A detailed discussion of inter-union relations during the diesel dispute is presented in later sections of this investigation.

A number of railroad personnel officials predict the Brotherhood of Locomotive Firemen will continue to fight over the diesel firemen issue, until either all diesel firemen positions are reinstated, or the union is destroyed. Thus it can be expected that the year of 1966 will be replete with diesel dispute management-labor threats, court injunctions, investigating boards, and, perhaps, even further government sponsored compulsory arbitration. As later sections of this study will indicate, the diesel dispute has reached some of its most critical stages during the Second World War and the Korean War. In 1966, the diesel crew controversy arrives at a new crisis, this time concurrent with the war in Viet Nam.
Even with the Congress sponsored "peace" period, upheld by the U. S. Supreme Court, the nation would not have to wait two years for further labor action in this dispute. On December 29, 1964 (nearly the middle of the "Congressional Peace Period"), the Brotherhood of Locomotive Firemen and Enginemen struck the Southern Railroad over the diesel firemen problem. A union spokesman said that the strike was called because the Southern was operating locomotives without firemen.\(^{16}\) However, the union's action apparently could not be interpreted as being in contempt of Congress. Since the Southern and the Florida East Coast Railroads were the only major railroads not involved in the national strike threat that brought on the Congressional Arbitration Law, these railroads were not covered by the provisions of the Arbitration Board's ruling.\(^{17}\) Even though the Southern had chosen to bargain separately over the diesel firemen issue, the railroad attempted to operate its diesel locomotives without firemen, just as the Arbitration Board had ruled the other railroads could do. This action by the Southern caused the Brotherhood of Locomotive Firemen to call a work stoppage and thus destroy the supposed two-year peace period of the diesel dispute.

The management position in the diesel crew controversy was expressed by the Chairman of the Labor Relations Committee of the Association of Western Railways, Theodore Short, when he stated in 1961, that the work rules in force at the time made locomotive firemen beneficiaries of a job security promise unique in railroad labor


\(^{17}\) U. S. News and World Report, p. 71.
According to this railroad spokesman, firemen had been assured by written contract for over twenty-five years that they would be employed, regardless of need, on all types of motive power designated in the agreement as a locomotive. Short further remarked:

No other railroad operating craft enjoys the protection of such a promise. If railroad yards could be completely automated, switchmen would disappear, but if anything falling within the definition of locomotives were still used, a fireman would be there, riding on it. If trains could be operated without engineers, engineers' positions would evaporate, for engineers' positions exist by necessity, not by contract. In such a case, however, the engineers would not be out on the street. Exercising their seniority, they would move over to the left side of the cab and become helpers to their former selves and it would be the junior firemen who would be pounding the pavement.

The question of whether the diesel crew dispute can ever be resolved completely, and by what means, haunts every railroad mediator. It appears that past railway labor agreements seeking to eliminate the non-steam engine crew dispute, in reality, only have intensified the controversy; at best, in certain instances, they have served to alleviate certain aspects of the problem for temporary periods. In order to establish a path of negotiations capable of achieving the complete settlement of this dispute, it is necessary to evaluate the strengths, errors, and limitations of previous locomotive crew labor agreements. The story of these agreements actually begins with the development of railway labor organizations.

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19 Ibid.

20 Ibid.
Development of Railroad Labor Organizations

Although the American Railroad Industry dates back to the 1820's, it was not until 1855, that the first railway labor organization developed. In that year, one of the oldest of American labor unions, The National Protective Association of Locomotive Engineers, came into existence; it remained in operation until 1861. In 1863, organization of The Brotherhood of Locomotive Engineers marked the birth of the modern era of railway labor relations. In a comparatively rapid manner, the Order of Railway Conductors and Brakemen organized in 1868, the Brotherhood of Locomotive Firemen and Enginemen in 1873, the Brotherhood of Railroad Trainmen in 1883, and the Switchmen's Union of North America in 1894. Thus, by 1894, all of the principal railroad operating unions were established, and the stage was set for the first act of the contemporary railway labor controversy over dieselization.

Much of the confusion and difficulty currently characteristic of railroad labor relations can be traced to the fact that the above labor unions, for representation purposes, do not adhere rigidly to occupational and craft lines. For example, conductors and brakemen may be represented by the Order of Railway Conductors and Brakemen, or by the Brotherhood of Railroad Trainmen. Engineers may be represented by the Brotherhood of Locomotive Engineers, or by the Brotherhood of Locomotive Firemen and Enginemen. Firemen may be represented by the Brotherhood of

Locomotive Firemen and Enginemen, or by the Brotherhood of Locomotive Engineers. Yard conductors and foremen, yard brakemen, and switch-tenders may be represented by the Brotherhood of Railroad Trainmen, or by the Switchmen's Union of North America. In the case of some smaller roads, the Brotherhood of Railroad Trainmen has encompassed all classes of operating employees. This "interdisciplinary" approach to railroad labor relations has complicated and aggravated an already strained labor-management relationship, particularly in regard to the issue of diesel crew composition. On some roads, engineers, firemen, and head-end brakemen have united to make their demands of management simply because they belonged to the same union, rather than because they had similar occupational interests at stake. On other roads, where engine crew members belonged to separate unions, jurisdictional fights and conflicting demands between the representative labor organizations tended to frustrate management in its attempts to negotiate the issues of the diesel dispute.

Shortly after the various railway labor organizations were established, collective bargaining procedures were employed to determine formal railroad labor agreements and work rules. Railroad work rules currently in dispute are not the result of any one particular labor agreement; rather, they are the cumulative consequence of a complex interplay of technology, tradition, and a number of vague and obsolete labor agreements. It is apparent the lack of absolute definition and preciseness in previous locomotive crew agreements has contributed prominently to the current diesel engine crew dilemma. An analysis of the history of the diesel dispute makes this point clear.
Origin and Features of Railway Labor Agreements

The initial rules governing pay rates and working conditions of railroad personnel were simply instructions passed orally from management to employees. As railroads grew larger and more complex, the oral instructions were superseded by written statements posted on bulletin boards and distributed directly to employees. It was not long before the expanding scope of railroad operations necessitated the standardization of such work rules; thus the printed rule books came into existence. These rule books were not agreements between management and labor; they were merely a set of standard instructions compiled by management, concerning employee operating duties and associated pay rates and privileges. Although it seems possible to assume that railroad workers had some influence in determining the contents of these early operating rule books, the collective power of railroad employees was not sufficient in the first half century of American railroading to bargain formally with management over work rules. During this period, management retained the unilateral right to change work rules and pay at its discretion and convenience.

By the 1870's, however, railroad labor organizations had gained sufficient strength to demand they have some part in the writing or revising of the operating rule books. The unions also demanded the separation of technical work orders from employee work rules, claiming the latter should be determined only through mutual agreement of management and labor. As a result of these demands by the unions, two sets of railroad rules developed. One set, called the "code of operating
rules," was developed unilaterally by management, primarily to cover technical train operation and support activities. The other set, known as the "schedule of operating rules," covered those employee work rules developed through management-union negotiations. The term "schedule" was used to identify the latter category of work rules, because railroad collective bargaining in the late 1800's generally was limited to schedules of pay rates. With tradition in the railway industry showing its strength, all current railroad collective bargaining agreements, regardless of content, are referred to as "schedule rules."

Early Locomotive Crew Labor Agreements

The first schedule agreement in the railroad industry was enacted between the New York Central and Hudson River Railroad and the Brotherhood of Locomotive Engineers on the 26th of January, 1875. This agreement, according to railroad folklore, was contained on one-half of a page; the same kind of document today typically numbers about 200 pages of small narrowly spaced print. Technology, labor organizations, and industrial growth have complicated these current agreements to the point that the rank and file union member apparently knows little of them, and understands less. In this regard, it was of interest to note that a personnel supervisor of Railroad Y, while accompanying the author

22For an intensive analysis of the railroad engineer's role in organized labor, of the history of the Brotherhood of Locomotive Engineers, and of railroad labor relations in general, see: Reed C. Richardson, The Locomotive Engineer 1863-1963 (Ann Arbor: The University of Michigan, 1963).

on a tour of railroad facilities in November of 1961, had questions continuously posed to him by employees, concerning work rule agreements and pay schedules. This same personnel supervisor stated that employees of his railroad found every excuse possible to engage him in conversation, either in or out of his office, in order to ask questions about work rules and pay rates applicable to them. One elderly railroad employee, later identified as a former local union official, commented to the author, "The trouble with modern railroading is that labor and management leaders are so busy formally agreeing as to how they will get along with each other, there is no time or energy left to just plain work together."24

The 1875 Engineers' Agreement guaranteed a minimum pay rate whenever an engineer was required to report for work. The agreement also established the 100 mile standard day's work for engineers, a standard which still exists. Another section of the agreement established basic seniority rights for engine crews. One of the most "unusual" provisions of this early railroad labor agreement was that it eliminated pay for time not worked. As railroad officials have been quick to point out, this was the only time such a provision "infiltrated" a railroad labor agreement.

From a behavioral standpoint, the most important aspect of this agreement was that provision which governed allocation of locomotives to engineers by the division master mechanic. In the days of steam, engineers and firemen frequently had "private" locomotives, in the sense

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24 Statement made to author by senior yard engineer of Railroad Y, November 10, 1961.
that certain engines were assigned to specific engine crews. The technical nature of the steam locomotive was such that, in most cases, it was restricted to approximately a 100 mile divisional run. Since the engineer and fireman also operated within the confines of a division as their day's work, it was not unusual for an engine crew to be assigned constantly to a particular locomotive; while the engine crew rested for the return trip, the locomotive was serviced. Consequently, each engine crew tended to identify with a particular steam locomotive, as if it was a prized personal possession. The pride and affection crews displayed toward their steam locomotives would be difficult to match for a relationship between man and machine. It is apparent such a relationship was a favorable influence upon railroad employee morale.

The diesel locomotive, because of its inherent mechanical features, required no divisional boundaries for servicing; it could be operated for thousands of miles without even minor servicing. Since diesel engine crews normally were restricted to divisional runs, there was little, if any, opportunity for "personal" locomotives with diesel power. This feature of the diesel did not serve to endear it to former steam crews.

The Engineers' Agreement of 1875 established an important railway labor precedent, in that it contained no termination date. This agreement was not enacted to cover a designated period of time; it was to remain in force until specifically changed by the parties involved. Railroad labor agreements still are characterized by such an "open-end"

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25 Reed C. Richardson, _op. cit._, pp. 255-256; B. A. Botkin and Alvin F. Harlow, _op. cit._, p. 42.
feature, in keeping with the provisions of the Railway Labor Act.26 This peculiar characteristic of railway labor agreements has made it extremely difficult to revise or modify work rules as technology has changed, a condition which has influenced many of the personnel problems involved in dieselization.

The first schedule agreement in which the Brotherhood of Locomotive Firemen and Enginemen participated was dated July 1, 1876.27 This agreement was made with the Illinois Central Railroad and covered locomotive engineers, as well as firemen. It was customary in the early years of railroad collective bargaining for the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen to enter into joint agreements with the carriers.28 Such an arrangement further emphasized the teamwork and interdependence between engineer and fireman on steam locomotives. In contemporary practice there are no such joint agreements. In fact, these two unions are bitter jurisdictional rivals in current railway labor affairs, a situation which this


28 Philip Taft, op. cit., p. 148.
study will indicate has resulted to a significant degree from the development of non-steam motive power and the associated changed relationship of engineer and fireman.

Electric Motive Power Launches the Non-Steam Engine Crew Dispute

The first non-steam railroad motive power units of any consequence were the electric motor cars. The electric motor car was designed to operate as an independent unit with, perhaps, a trailer car or two, rather than as a power unit for a train of extensive length. Electric motor cars were introduced in the late nineteenth century, with their greatest popularity occurring in the early-to-middle twentieth century. These vehicles primarily have carried passengers, though light freight and mail frequently have been carried aboard as well. Their terminals and stops either have been confined to city limits (street railways), or to cities within a regional area (interurban-commuter service).

The firemen's union never has demanded that firemen be assigned to electric motor cars. In fact, various railway labor agreements specifically have exempted electric motor cars from a fireman requirement. If this point raises the question of why should a fireman have been required on an electric vehicle with no fire to stoke, it is necessary to indicate that neither has there been a fire to attend on the diesel engine; the Brotherhood of Locomotive Firemen, however, has been


30 Memorandum of Agreement, by Eastern Carriers' Conference Committee and Brotherhood of Locomotive Firemen and Enginemen, August 13, 1943, p. 2.
vehement in its demands for diesel locomotive firemen. As to why the firemen's organization never demanded that firemen be assigned to electric motor cars, it appears these light powered vehicles raised no great menace to either union survival or to the security of firemen positions.

Like the electric motor car, the electric locomotive derived its power from an overhead wire or third rail electrically charged by a remote generating station. It differed from the electric motor car in power but not in basic mechanics of operation. Rather than carrying passengers and cargo within the propelling unit, it powered heavy trains of passenger-and-cargo-carrying "engineless" cars. In accordance with a vague definition derived from a number of labor agreements, such an electric vehicle has been classified as a "locomotive." Thus it has been subjected to all of the railway labor organizations' demands relevant to locomotives, particularly to those demands requiring a fireman aboard.

From the standpoint of labor negotiations, the definition of a locomotive seems to have depended upon whether the views of labor or management were considered. Labor's view has been quite broad, as it attempted to make the definition of a locomotive cover any kind of power unit having a major impact upon operating rail employees' jobs. Management's interpretation of a locomotive, however, has been very narrow, so as to minimize the scope of union demands for firemen and locomotive pay rates. Except for electric motor cars and certain light weight-
light power internal combustion engine units, the unions have been quite generous in bestowing the title locomotive upon the various categories of railroad motive power.

A railroad official once remarked to the author, half-jesting, that his company always exercised caution in its application of the term locomotive to self-powered railroad equipment. He then made the statement, "Who knows, an electric typewriter may be next!" At the time, this remark meant little, but after accomplishing the research for this study, the implications of the statement appeared serious. The rail unions, at times, have argued for such extensive crews on certain self-propelled units restricted to maintenance of right-of-way, that labor appeared to be implying these vehicles were locomotives, if not complete trains. It does seem interesting to speculate upon the use of a full freight crew (engineer, fireman, head-end brakeman, rear-brakeman, and conductor) upon a track weed-burner or hand-car. Since there have been a large number of maintenance vehicles in use on the railroads, undoubtedly, this group of "power" units has excited labor full-crew proponents. The whole idea would be amusing and something to joke about, if it were not depicting actuality in union demands and company income statements. As this study will continue to indicate, some very unrealistic ideas and demands have been expressed by both management and labor throughout the

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31 Statement made to author by official of Railroad Z on January 20, 1961.
32 Idem.
diesel dispute. It is obvious such actions only served to confuse and complicate negotiations of the disputed issues, consequently, impairing ultimate solution of the diesel labor problem.

The Brotherhood of Locomotive Firemen did not demand that firemen be assigned to the first electric locomotives placed in service at the turn of the century. There were simply too few electric locomotives in operation, at the time, to constitute a serious threat to the continued existence of locomotive firemen positions. Although the firemen's union began making demands for the assignment of firemen to electric locomotives of certain railroads by the second decade of the twentieth century, there was no blanket demand on this issue until mid-century, when popularization of the diesel locomotive occurred. The threat of all combined non-steam locomotive power, at that time, just became too great to ignore any aspect of it.

The various major railroads utilizing electric locomotives over the years have included the Pennsylvania, Great Northern, Virginian, Norfolk and Western, New Haven, Baltimore and Ohio, New York Central, and the Milwaukee Road. To show the disparity of timing in union demands for firemen to be assigned to electric locomotives, the Baltimore and Ohio operated its electric locomotives until the early 1940's (nearly fifty years) without firemen, whereas the Pennsylvania was forced to employ firemen on its electric engines by 1911. There were a number of cases wherein electric railways, originally motor car

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33 E. R. Johnson, Groover G. Huebner, and G. L. Wilson, op. cit., p. 56.
operations, acquired electric locomotives, but were not pressured to place firemen on any of their power units. The logic behind this action, as with the time differential in demands for firemen to be assigned to major railroad electric locomotives, probably was built upon the scope of the particular non-steam threat to union security. The electric railways were generally too small to worry about, no matter what kind of power they converted to. The Baltimore and Ohio was able to operate its electric locomotives for almost fifty years without firemen, because the scope of its electrification was limited to three-and-one-half miles of tunnel operation within the city of Baltimore. The Pennsylvania, however, was allowed to operate its electric engines for only one year without firemen (1910-1911), since a large eastern segment of the Pennsylvania system was electrified, with a substantial number of locomotives involved.


36 The firemen's union was not alone in ignoring the operations of electric railway companies. The major railroads also wanted nothing to do with electric railway firms. The railroads treated them as if they were parasitic to the nation's rail system, and if left alone, might just disappear. This was probably due to the condition that the electric railways took just enough short-haul passenger and light freight business to be a thorn in the side of the major railroads. For reference on this point, see: William D. Middleton, op. cit., p. 384.

37 E. R. Johnson, Groover G. Huebner, and G. L. Wilson, op. cit., p. 56.
It was of interest to the author to hear managerial employees of railroads with electrified operations speak about union demands for firemen on electric locomotives. There appeared to be almost a state of apathy among railroad managers about the entire matter. Even on roads which have operated a large number of electric engines, there was little expression of feeling among railroad officials on the issue. From a technical standpoint, there has been no greater need for firemen on electric engines than diesels. However, railroad managerial personnel have been united in a dogmatic and vehement negative position on the diesel firemen issue. There seemed to be a lack of managerial information, with no united managerial "public line" regarding electric engine firemen; the reverse condition has been true in the case of diesels. It appeared to the author that propaganda indoctrination of managerial employees on the diesel crew problem has been intense and effective, probably due to its vast impact upon railroad income statements.

Regardless of the scope of electrified operations on the major railroads, with the mid-century popularization of the diesel, the firemen's organization finally demanded, and was able to secure, firemen positions on all non-steam locomotives of these railroads. The reasoning behind the union's total non-steam action at this time appears quite complex, but would seem to center around the following factors. First, it would be simpler, more convenient, and more forceful to make a blanket demand for firemen on all major railroad non-steam locomotives, regardless of type. Second, the introduction and gradual popularization of the diesel, despite some "unbelievers," caused much thought and conversation among railroad personnel about the future potential of all
forms of non-steam power. It must be remembered that there was the time lag between the introduction of the diesel locomotive in the 1920’s and its period of popularization in the 1940’s and 1950’s. This lag gave the firemen's union the time necessary to prepare its organized effort to place firemen on all locomotives, steam, diesel, or electric. The Brotherhood of Locomotive Firemen was farsighted enough to plan for any eventuality in future railroad motive power, and it was taking no chances in this regard. A third reason for the union's mid-century blanket demand that firemen be employed on all major railroad electric and diesel locomotives was likely a coincidental interplay of time and economics. The diesel had been introduced in the early 1920’s and was in its infant stage of popularization when the 1930 depression period job havoc broke. The memory of a depression-oriented scarcity of jobs was still fresh enough to intensify railway labor's fear of loss of any jobs to changed technology.

By the early 1940’s, the firemen's union had negotiated agreements with all the major railroads requiring firemen to be employed aboard electric locomotives. The manner in which the union accomplished this victory was very similar to, and intrinsically tied into, its concurrent effort to place firemen on all diesel locomotives. Due to the scope of dieselization, however, the negotiations and labor agreements involving diesel engine crews were far more complex than was the collective bargaining over electric locomotive crew requirements.
Rail Car Streamlined Trains
Stir the Unions to Action

The success of gasoline and diesel powered rail car trains in the early 1930's made it clear to railroad labor that internal combustion power was no longer a mere threat to firemen employment; it had become an outright menace which demanded immediate union action. The non-steam era of railroad operations truly had arrived by the 1930's, and its entrance was marked glamorously by the introduction of those pillars of Americana, the streamliners. The streamliners were rail car trains consisting of a limited number of sleek-lined passenger cars, with only the lead units powered by internal combustion gasoline or diesel engines. However, these powered lead units were not considered as locomotives, since they also carried revenue producing passengers or cargo (railway express and mail).

Thus by the middle 1930's, dieselization had not yet reached locomotive proportions, but it was rather apparent the development and popularization of internal combustion locomotives were imminent. It would seem from the storm the unions stirred over a relatively small number of streamlined rail car trains, that they were quite aware of the proximity of locomotive dieselization. Never before had railroad labor displayed so much interest in an employment problem that, on the surface, seemed so immediately limited in scope. The rail unions could not get excited even over power unit crew manning on electric railways, which involved substantially more units than did the few streamline rail car trains operated by the major railroads.
The railroads had displayed an inclination not to use firemen on the streamlined rail car trains, since there were no "fires" to attend upon them. However, it was not the actual or current situation that alarmed railroad labor; it was the potential of that situation erupting into a mass conversion to job-eliminating non-steam motive power. The firemen's union especially desired to establish favorable work rule precedents while the diesel was "insignificant" enough that the carriers would be willing to enter into engine crew job protection agreements. Accordingly, the Brotherhood of Locomotive Firemen demanded the assignment of firemen to all rail car trains. The union simply reasoned, at the time, that there were so few trains involved the carriers would not want to risk a major labor conflict over the assignment of firemen to the rail car streamliners. The firemen's organization was counting on the carriers not to exhibit the foresight it was displaying and thus yield to union pressure for the employment of firemen on rail car trains.

The Brotherhood of Locomotive Firemen reasoned correctly. The carriers capitulated to the union's rail car train firemen demand, not wishing to risk a strike over such an insignificant number of trains. As a result of this lack of managerial foresight, the firemen had gained the precedent leverage in work rules necessary to impede the carriers' future mass dieselization programs. Railroad management had been out-maneuvered by a more alert labor organization on a most critical manpower issue.

Surprisingly, the first rail cars were operated by shop mechanics rather than by engineers. However, the Brotherhood of Locomotive Engineers quickly demanded, and gained, the assignment of engineers to
the rail cars. The Brotherhood of Locomotive Firemen did not demand firemen positions on rail car trains until the middle 1930's. As previously pointed out, this was the period in which railroad labor recognized the potential of the total non-steam threat. Rail cars had been operated before this time without firemen, but such trains were relatively few in number and insignificant to the American railroad scene. The introduction of the rail car streamliners in the 1930's, however, was another story. Although still few in number, they were very glamorous pieces of equipment and, consequently, captured the attention of the nation, railroaders, and the general public alike.

The Brotherhood of Locomotive Firemen could not afford to allow these highly publicized and popular trains to be operated without firemen. A dangerous precedent might have been set at a time when the threat of internal combustion power was becoming increasingly ominous to labor. The rail car streamlined trains had ushered in the diesel era in two respects. First, technologically they firmly established the potential of internal combustion railroad motive power. Second, as a corollary of the first point, they stirred labor to make its first concerted demands for "full-crews" on all major railroad non-steam motive power units.

Rail Car Train Labor Agreements

Included among the initial group of streamlined rail car trains were the four "Zephyr's" of the Burlington (1934-1935), the "City of Salina" of the Union Pacific (1935), the "Comet" of the New Haven (1935), and the "Flying Yankee" of the Boston and Maine (1935). The Brotherhood
of Locomotive Firemen demanded that firemen be assigned to all of these trains. The Union Pacific gave in to this union demand, while the other roads continued to operate their streamlined trains without firemen. Thus the union resorted to a strike call to bring the Burlington and the New England roads into line. At this point, these railroads also capitulated to the firemen’s demand, feeling that a fight over a few firemen assigned to a few rail car trains was not worth the cost of a total suspension of traffic on their heavily competitive systems. In addition, labor was threatening to demand further state full-crew legislation, if firemen were not assigned immediately to the rail car streamlined trains. The firemen work rules precedent for non-steam motive power

The full-crew laws refer to state legislation governing the number of railroad personnel to be aboard various types of trains operating within the boundaries of a particular state. Sixteen states have had such laws, while seven other states have given their public utility commissions the right to set minimum train crews, as they saw fit. In accordance with the findings of the recent Presidential Railroad Commission and the Congressional Arbitration Panel, a number of states are currently in the process of repealing this antiquated legislation. Except for the states of California and Wisconsin, these laws were enacted before the 1920’s, to ensure that safety standards were met in relatively primitive railway operations. Although full-crew laws generally were enacted before dieselization and the air brake, they have continued as statutes to hamper the efficiency of modern railroad technology. Thus, with the exception of California and Wisconsin, it could not be said that such laws came about to protect jobs from dieselization; however, the carriers have claimed that their continued existence and implementation on technologically advanced railways have been an unjustified labor motivated job creator and job preserver. The full-crew laws enacted in California and Wisconsin in 1959, while undoubtedly legislated under the guise of safety requirements, appear to have been instigated by railway labor to protect the jobs of engine and train crews in the diesel era. For a more complete discussion of the current status of full-crew laws, see: Victor Riesel, "New York to Chicago: Crews Change Eight Times," The Cincinnati Enquirer, February 19, 1962, p. 2-A, and "Railroad Dispute Shifts," The Cincinnati Enquirer, May 31, 1964, p. 14-C.
clearly had been established, and the Brotherhood of Locomotive Firemen could claim a major victory with tremendous future implications.

The arguments presented by the Brotherhood of Locomotive Firemen as to why firemen were needed on the rail car trains appeared to be composed of a number of unsubstantiated and contradictory claims. What made this situation even more unreasonable, was that the railroads knowingly surrendered to such a union position, simply to avoid an immediate labor conflict; this action by the carriers, in essence, gave the union arguments validity. The labor position on rail car train firemen, bolstered by managerial capitulation, became the basis for many of the key arguments used later to justify diesel locomotive firemen. Although railway labor leaders claimed that rail car train firemen were needed for safety purposes, certain arguments they introduced to support their case actually contradicted this idea. Throughout the negotiations over the rail car firemen issue, the carriers weakly argued that all labor really desired was job protection and union preservation.

Mr. Ralph Budd, the Burlington President, in reference to the rail car firemen dispute, stated later before Railroad Emergency Board Number Seventy, on July 28, 1949:

"In discussions between representatives of the Brotherhood and our officers, it was apparent, although there was some talk of safety, that the demand was in fact an effort to prevent the possible unemployment which they thought the operation of the Zephyrs would cause." 39

The firemen's agreement with the Union Pacific stated that rail car train firemen would give "necessary attention" to the operation of

the motor-generating machinery, air conditioning, heating, lighting, and related equipment, throughout the entire train, while en route. This provision in the agreement made clear how strongly labor really believed in its claimed rail car train firemen safety argument. The word "safety" was not even mentioned in the basic responsibilities of the rail car firemen in this agreement. In regard to the arguments over non-steam motive power firemen, the safety consideration has referred to the availability of a fireman for duties in the control cab of a train, involving signal and right-of-way observation, and relief of the engineer in an emergency. It would be impossible for a fireman to have much time to spend in the control cab of a rail car train, if he earnestly was checking engine room machinery and train mechanical equipment, as stipulated in the Union Pacific agreement. In fact, some rail car trains did not have sufficient room in the control cab for a fireman. On such trains, the fireman had to ride in the engine room, baggage room, or passenger compartment, all hardly places from which the above safety duties could be performed effectively.

It is indeed questionable whether even the rail car firemen duties specifically prescribed in the Union Pacific agreement were carried out effectively, if for no other reason than the technical ignorance of the firemen of the rail car train's machinery and equipment. The agreement provided that rail car firemen would come from the ranks of steam locomotive firemen. However, steam engine firemen were not internal-

\[40\] Ibid.
\[41\] Ibid.
combustion mechanics, electricians, or refrigeration technicians; these were the specialties rail car train maintenance required. It appears about all the rail car fireman could do in his job, as the Union Pacific agreement stated, was literally give "attention" to the train's machinery and equipment. In this case, attention meant observation without action. An interested passenger might have done the same thing for the price of a free ticket.

The provisions of the Union Pacific engine crew rail car agreement were typical of those stated in similar agreements with other concerned railroads. What made the rail car firemen dispute so ridiculous was not so much the absurdity of the union arguments in the matter, but rather the fact that the railroads, in effect, gave them validity by formal agreement. The rail car train engine crew problem, however, was just the mild beginning of the labor-management controversy over internal combustion motive power. There would be only a short wait for the non-steam engine crew dispute to achieve explosive proportions; the mass conversion from steam to diesel locomotives was just around the corner.
CHAPTER IV

THE FIRST FIFTEEN YEARS OF THE DIESEL
LOCOMOTIVE CREW CONTROVERSY

Labor Takes the Offensive

In October of 1936, the long developing storm over locomotive crew manning broke, and it unleashed a torrent of labor demands. At this time, fortified by its recent victory in the preliminary streamlined rail car train firemen dispute, the Brotherhood of Locomotive Firemen presented its initial demand to the carriers for the assignment of firemen to all types of railroad motive power. There were to be no exceptions, and no leniency was to be shown to the carriers in this matter. The Brotherhoods had made their first major offensive move in a labor war that would last for decades. The carriers, correspondingly, were placed in an ill-prepared defensive position, a situation which was not uncommon throughout the diesel controversy.

Until the middle 1950's, the railway labor organizations seemed to take the offensive in every new phase of the locomotive crew dispute, through their initiation of demands for changes in engine crew composition and work rules. The railroads, on the other hand, appeared to be constantly attempting to maintain a status quo defensive type of position. Perhaps, this was due to a lack of foresight and general
lethargy on the part of railroad management. When in 1956, the carriers finally decided to reverse their pattern of defensive and delaying action, and make some relatively aggressive moves in the diesel dispute (such as the elimination of freight and yard diesel firemen), they ran into a solid uncompromising wall of labor opposition. It should be clear that dynamic labor problems require dynamic managerial action from the beginning. Certainly, it could not be expected that labor organizations readily would submit from fright to a management team which, weak and dormant over the years, suddenly decided to come to life.

According to some of the more senior members of railroad management, there were a number of railroad executives who felt very strongly about not submitting to labor's first major non-steam fireman demand. They had recognized the efficiency potential of the diesel, and did not want it impaired in any manner. However, their views were not to govern the carriers' action in this matter.

It was an interplay of economics and politics that caused the railroads to yield to the Brotherhood's demand and agree to assign firemen to diesels. As discussed in the previous chapter, the firemen's organization had threatened a major strike if firemen were not placed upon the streamlined internal combustion rail car trains. In addition, the firemen had threatened to seek further state full-crew legislation if their demand was not met. The carriers that operated the rail car streamliners, undoubtedly under pressure from other interested railroads, decided not to risk a major regional or national rail strike over the few trains and few firemen positions involved. The carriers also feared the distinct possibility of further state full-crew legislation,
particularly at a time when, following a major depression, the nation appeared to be looking more liberally at certain socio-economic conditions of the society. The Brotherhood of Locomotive Firemen had made its formal demand for the assignment of firemen to all types of motive power on October 31, 1936. Just a short time later, Franklin Delano Roosevelt, the "New Deal" candidate, was re-elected President, with only Vermont and Maine voting against him. It appeared to the carriers that, under such circumstances, it indeed would be foolish to contest with labor in the state legislatures over the creation and preservation of employment opportunities.

The most surprising aspect, however, of this whole affair was that the Brotherhood openly claimed its non-steam firemen demand was based on a need to relieve the current unemployment situation.¹ Virtually no attention was given in the union argument to a functional need for non-steam firemen. Mr. F. G. Gurley, a former President of the Santa Fe who had served on the railroads' committee to negotiate the 1936 non-steam firemen demand, testified before the Presidential Railroad Commission:

Mr. Robertson, who was then President of the Firemen's organization, told us during these negotiations that his proposals were not based upon any alleged need for the men. Rather, he argued the point that the carriers should relieve the unemployment situation, at least insofar as it affected the firemen . . . . During the negotiations we had little or no discussion about what a fireman would do on these locomotives. It is my

recollection of the conferences that Mr. Robertson said that the railroads should give the firemen something to do on these diesels. He said he wanted them to be busy. But I cannot recall that he suggested any specific duties for firemen on diesel power . . .

There appear to have been some "secondary" arguments advanced by labor that a fireman was needed on non-steam locomotives to assist the engineer in observation of signals and right-of-way, and to perform emergency maintenance en route. Regardless of the validity of the union arguments on the non-steam firemen issue, the carriers, for the reasons mentioned previously, bowed to labor in February of 1937. The result was the historic and precedent setting Firemen's National Diesel Agreement of 1937.

Firemen's National Diesel Agreement of 1937

Upon making the decision that they would have to yield, at least in part, to labor on the non-steam firemen issue, the carriers suggested a compromise arrangement. The railroads proposed that firemen be assigned to all non-steam locomotives weighing more than 225,000 pounds on the drivers. However, the Brotherhood of Locomotive Firemen refused to accept this carrier proposal, as it excluded most yard-transfer type non-steam locomotives. It should be recognized that in 1937, except for less than a dozen internal combustion powered streamlined passenger trains, the diesel locomotives in service consisted primarily of small light units assigned to yard or intra-terminal transfer work. Thus the carrier proposal was an agreement to use firemen on a few diesel-powered

2 Transcript of Proceedings of the Presidential Railroad Commission, pp. 810, 812.

3 Ibid., p. 812.
passenger trains, but not on a growing number of diesel yard engines. The union, of course, ideally wanted firemen assigned to all motive power, regardless of weight on drivers or type of service involved.

The compromise that determined the context of the 1937 Firemen's Agreement was hardly a compromise for labor. A weight of 90,000 pounds on drivers was established as the dividing line for the use of firemen on non-steam power. The only apparent reason for the choice of this figure would seem to be that it was approximately half-way between a one-pound-on-drivers ideal desire of labor and the 225,000 pounds-on-drivers proposal of the railroads. According to the Agreement, a fireman would be employed upon all diesel and electric locomotives weighing 90,000 pounds or more on its drivers. Firemen would not be required on diesel or electric locomotives weighing less than 90,000 pounds on their driving wheels, except for those light diesel units powering streamlined or main-line through passenger trains. The streamlined internal combustion rail car trains were required to have a fireman, although electric motor car trains were exempt. All existing rail cars, regardless of weight, as well as new rail cars weighing less than 90,000 pounds on their drivers could be operated without firemen. All new or rebuilt rail cars that weighed over 90,000 pounds on their drivers required the

4 Ibid., pp. 27, 28, 812.

5 Ibid., and Arbitration Board, Case A-3391-ARB, 140, pp. 6, 7, 15, 19.

6 Transcript of Proceedings of the Presidential Railroad Commission, p. 812.

7 Memorandum of Agreement, by Eastern Carriers' Conference Committee and Brotherhood of Locomotive Firemen and Enginemen, August 13, 1943, pp. 2, 3.
assignment of a fireman. In the final analysis, there were very few major railroad revenue power units that, under the terms of the Agreement, could be operated without firemen. Railway labor had won a clear and important victory.

As indicated previously, neither the negotiations nor the final 1937 Agreement stated what the duties of a non-steam locomotive fireman should be. The President of the Brotherhood of Locomotive Firemen had passed this problem off to the carriers with absolutely no suggestions, other than he hoped the railroads would come up with something to keep diesel firemen busy. Except for right-of-way lookout duties and signal checking with the engineer, there was little for the 1937 diesel fireman to do. Even with the relatively primitive development of diesel motive power at this time, the equipment was already too automatic and too technically efficient to require any other services of a fireman. A number of the high-speed streamlined rail car passenger trains carried their own trained diesel technicians, in case of mechanical failure en route. On these trains, the fireman at least could act as an unqualified assistant to the diesel technician. The railroads felt it would take considerable time to train former steam firemen in the intricacies of diesel machinery repair; by that time, the machinery design probably

8Ibid.
9Arbitration Board, Case A-3391-ARB, 140, pp. 6, 7, 26, 27, 30, 31.
10Ibid., p. 7.
would be so efficient that en route maintenance would be unnecessary.\textsuperscript{11}

The problem of what tasks to give the early diesel firemen was not an easy one to solve. The firemen's organization had dictated that firemen be assigned to diesels, but the union seemed uninterested in how the railroads would eliminate boredom and maintain the self-respect of these seemingly unneeded men. According to railroad hearsay, this problem was handled in a peculiar and unique manner on some diesel locomotives. On certain diesels, especially newer units, the railroads converted automatic equipment to manual operation in order to provide the firemen with something to do. This reverse pattern of automation would not appear to be the key to increased railroad efficiency, regardless of the personnel problems it temporarily may have alleviated.

There were, of course, some normal opportunities aboard diesel locomotives for the firemen to turn valves, observe gauges, and listen for unusual engine noises. However, after the novelty of these "exciting" chores wore off, the railroads certainly had their share of bored and restless diesel firemen. The author recalls a pertinent incident that occurred while he was inspecting the early Union Pacific internal combustion streamliner, City of Salina. In answer to his question of the guide as to what a large wheel in the engine room was used for, he was told that it was for the fireman "to play with." Perhaps, there was more truth than jest in that remark.

After the consumation of the 1937 Firemen's Agreement, the President of the Brotherhood of Locomotive Firemen and Enginemen

\textsuperscript{11}\textit{Ibid.}
commented that the preservation of firemen employment was a most significant feature of the Agreement. He further remarked that the preservation of employment, and the maintenance of the purchasing power and prosperity of the nation, was considered in signing the Agreement. It would appear that the preservation of the firemen's union was also a major consideration in establishing this Agreement.

Engineers React to the 1937 Agreement

The Brotherhood of Locomotive Firemen and Enginemen had little time to sit back and rest upon the laurels of its victory in achieving the 1937 Firemen's Agreement. A menacing shadow began to creep across the victory path of the firemen shortly after the Agreement became railroad law. Strangely enough, the ominous force which was about to become a major barrier to further, and even current firemen labor gains, was neither railroad management nor the government; it was, in fact, a partner labor organization, The Brotherhood of Locomotive Engineers.

Just months after the completion of the 1937 Agreement, the engineers' union challenged the Agreement's validity, and immediately embarked upon its own "make work" program, to ensure job security for engineers in the diesel era. The Brotherhood of Locomotive Engineers claimed that diesel power required the services of an engineer and an

14 Ibid., p. 16.
assistant engineer. Since there appeared to be no need for three men to operate a diesel locomotive, the engineers' union graciously was willing to eliminate the fireman from the diesel crew. Thus the recent 1937 job security victory of the firemen was challenged by a supposed partner union, which saw no place for a fireman in the diesel crew. The Brotherhood of Locomotive Firemen, of course, was disturbed by the action of the engineers in this matter. Union pride and preservation were at stake. Technological change, in the form of diesel power, had set the stage for a major jurisdictional battle between the two unions representing locomotive operating personnel. The diesel locomotive could now list one more accomplishment; it had divided railway labor in a most severe manner.

All of this was happening in the late 1930's, a period in which the diesel conversion was gaining its initial momentum on American railroads. In addition, multiple-unit diesels were beginning to make their appearance, as a means of providing more power for heavier trains. Due to technical characteristics of the diesel locomotive, one crew in the lead unit could control any number of other crewless power units. Thus the railroads were in a position to run fewer trains with fewer crews, while maintaining the same, or even higher levels of tonnage. It was difficult, because of the coordination involved, to more than triple-head steam engines. Even when three steam engines were used, three complete crews were required, as steam engines had no multiple-unit

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control capability. Each steam engine required a separate crew. On the other hand, using only a lead unit engine crew, diesel units could be added until the power needs of a train were met. With such power flexibility, the only limiting factors on train size were state and local laws (usually regarding train safety and blocked highway crossings, or job protection, in the case of state full-crew laws), tonnage to be hauled, coupler-drawbar capacities, and right-of-way capabilities (lengths of passing track, terrain, etc.).

A Jurisdictional Battle Develops

Fearing the crew cutting potential of the multi-unit diesel, the Brotherhood of Locomotive Engineers demanded that an assistant engineer be assigned not only to the lead or control unit, but also to the engine rooms of each additional unit of a multiple-unit diesel locomotive.16 This demand of the engineers certainly must have provoked the Brotherhood of Locomotive Firemen, which claimed the diesel engine room was the exclusive domain of the firemen.17 Besides, the firemen's union had recognized there was really not enough work in an engine room to require the full time services of either an engineer or fireman. The Brotherhood of Locomotive Firemen was faced with the intolerable situation of the engineers' union demanding that engineers displace firemen from a job that did not exist in the first place. The only natural thing, under such circumstances, for the firemen to do was to make a pertinent

16 Transcript of Proceedings of the Presidential Railroad Commission, pp. 31-32.

counter-demand. Accordingly, in May of 1941, the Brotherhood of Locomotive Firemen demanded a fireman be assigned to each unit of a multiple-unit diesel locomotive. By virtue of the 1937 Agreement, the firemen already had been assured of one position on a diesel locomotive. Thus, in part, they were reiterating what they previously had gained. An examination of testimony presented to pertinent negotiating conferences and investigating boards by the firemen's union, failed to reveal any back-up statement regarding what a fireman specifically would do on each unit of a multi-unit diesel locomotive. However, it only would seem reasonable to assume such a statement by the union was unnecessary, since the Brotherhood's leaders had obtained basic diesel firemen positions in the 1937 Agreement by openly admitting they did not know what duties a diesel fireman should perform; they just knew he should be there. The result of all these demands by the engineers and firemen was a national railroad crisis, that required the establishment of a Diesel Emergency Board in 1943. This Board was asked to consider the validity of the claims of the two unions against each other, and against management.

Although the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen had had their differences during the steam era over such issues as engine crew representation rights and maximum mileage work schedules, they had been united, at the same time, in their efforts to improve working conditions for engine service personnel.

18 Ibid., p. 16, and Transcript of Proceedings of the Presidential Railroad Commission, p. 32.

19 Arbitration Board, Case A-3391-ARB. 140, p. 16, and Reed C. Richardson, op. cit., p. 415.
The challenging action by the Brotherhood of Locomotive Engineers of the 1937 Firemen's Agreement, however, marked the absolute end of any semblance of a harmonious relationship between the two engine crew unions. Simultaneously, this challenge by the Brotherhood of Locomotives Engineers signaled the beginning of an inter-union jurisdictional war over engine crew composition and representation rights that seriously would impede the settlement of the labor problems of dieselization. Railroad engine crew labor relations immediately began to follow a vicious triangular pattern of controversy, involving railroad management, the Brotherhood of Locomotive Engineers, and the Brotherhood of Locomotive Firemen. Along with the battle between the two unions came an associated breakdown in the long standing close and smooth working relationship between engineer and fireman. With their unions in conflict, no steam engine interdependent duties to unite them, and other technological locomotive changes confronting them, the engineer and fireman became two individual parties fighting for self-survival. To complicate the entire situation even more, some engineers were members of the Brotherhood of Locomotive Firemen and Enginemen, the union which their craft was fighting. This point is discussed in detail later in this chapter.

Railroad labor relations pertaining to the manning of non-steam motive power had reached a highly disorganized and discordant state. The diesel crew problem no longer involved a conventional labor-management controversy; a bitter inter-union struggle also had become an intrinsic part of the dispute. The entire situation seemed to be a direct result of a lack of effective leadership by the railroads in a
period of major technological change. The question must be posed as to why management was not able to take advantage of the split between the two major operating unions, and settle the diesel dispute once and for all at that time. The answer would appear to lie in the fact that railroad management was just as confused and disunited as labor over the problems of diesel operations, and thus was in no position to exercise leadership in the situation. Clearly, the diesel locomotive and its associated technological changes were the major culprits in the critical state of railroad labor relations existent at the time. However, it was a management unprepared to handle technological change that allowed the diesel to upset railway labor relations so severely. Nevertheless, the errors were history, and the problems they created were the present and future dilemmas of railroad labor relations.

The 1943 Diesel Emergency Board

By 1943, the demands of the Brotherhoods regarding the assignment of extra engineers and firemen to the engine rooms of multiple-unit diesel locomotives had reached the national rail strike threat stage. The United States, at the time, was committed to a multi-front global war, with logistical problems growing greater by the day. A national rail strike would have had a devastating effect both upon the nation's economy and its war effort. In addition, with the country facing a general wartime manpower shortage, the railroad unions were insisting upon the assignment of men to seemingly unnecessary jobs on diesel locomotives. The situation was indeed critical. On February 20, 1943, an Emergency Board was appointed by the Chairman of the National Railway
Labor Panel to conduct hearings that would lead to a settlement of the dispute over diesel locomotive crew requirements; this Board was also asked to consider a contemporary controversy over engine crew wage schedules. 20

The 1943 Diesel Emergency Board was in the difficult position of having to investigate and resolve what was essentially a three-way dispute between the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and Enginemen, and railroad management. This was a battle between two powerful unions that simultaneously were fighting railroad management. It appears that the dispute marked the first occurrence in railroad labor history of a formal fight between the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen over engine crew manpower requirements. It was not so much a jurisdictional question of which union would represent the various engine crew positions, as it was a technical staffing problem of what the positions of a diesel locomotive crew should be. Throughout the steam era it was a bylaw of railroading that engine crews consisted of an engineer and a fireman (also a head-end brakeman on freight trains). The diesel locomotive, with some help from the electric locomotive, shook this tradition to its roots, as it opened up the entire matter of locomotive crew manning for reconsideration. However, this problem reached grave proportions at a most inconvenient time for the nation, the

20 Letter from the President of the Brotherhood of Locomotive Firemen and Enginemen and the Chairman of the Eastern Carriers' Conference Committee to the Chairman of the National Railway Labor Panel, W. M. Leiserson, dated August 13, 1943, p. 1.
middle of World War II. The urgency of the situation was indicated in a letter from the President of the United States, Franklin D. Roosevelt, to Mr. J. J. Pelley, President of the Association of American Railroads, when Mr. Roosevelt stated:

"... I am anxious, however, that in these troublesome times everything possible and fair - but within the National Policy - be done to dispose of management-labor disputes without in any way interfering with the full and adequate prosecution of our war program."  

The diesel crew demands of the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen, at the time of the convening of the 1943 Diesel Emergency Board, were exactly the same as those expressed by the two unions shortly after the culmination of the 1937 National Firemen's Agreement. By the early Forties, multiple-unit diesel locomotives usually consisted of from two to four units. Two or three units were common for passenger service, whereas three or four units were a standard freight consist. Thus, if the 1943 crew demands of the engineers and firemen had been met, there would have been a total of ten men required aboard a four-unit freight diesel. These ten crew members would have included the main operating engineer and fireman, four assistant engine room engineers, three assistant engine room firemen, and a head-end brakeman. Although such an arrangement would have provided an effective means of increasing railroad employment opportunities, it certainly would have been a most inefficient utilization of critical manpower.

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21Letter from the President of the United States, Franklin D. Roosevelt, to Mr. J. J. Pelley, President, Association of American Railroads, dated May 29, 1943.
However, during the hearings before the Emergency Board, the unions modified their diesel crew demands. This modification was undoubtedly due to the Brotherhoods recognizing such unrealistic and unreasonable demands might hamper their entire case. The Brotherhood of Locomotive Engineers reduced its crew demand to one engineer and one assistant engineer on diesel locomotives composed of one to four units; if more than four diesel units were used, at least one additional assistant engineer would be assigned. The Brotherhood of Locomotive Firemen reduced its diesel crew demand to one lead unit fireman, with one assistant fireman to be assigned additionally to diesel locomotives of two to four units. Both unions must have realized that if the Board decided to augment the diesel crew beyond the basic engineer and fireman positions established by the 1937 Firemen's Agreement, it was probable that only one additional man would be assigned. The question then was whether such a man should come from the ranks of firemen or engineers. Thus the two Brotherhoods united to fight management to gain the extra diesel crew position, and, simultaneously, diverged to fight each other regarding the craft of this additional crewman. This was the environment in which the 1943 Diesel Emergency Board met.

An Aspect of Agreement in the Dispute

At least there was one aspect of management-labor agreement within the diesel crew dispute. There appeared to be no argument

22 Transcript of Proceedings of the Presidential Railroad Commission, p. 32.

23 Ibid.
between the carriers and labor over the status of the head-end brakeman on diesel powered trains. Only one head-end brakeman would be assigned to road freight locomotives for freight switching duties en route, whereas no head-end brakeman would be required on passenger engines, regardless of the type of motive power involved. If switching of head-end cars (express, baggage, and mail cars) or passenger cars should be necessary on passenger trains, it would have to be accomplished by brakemen-trainmen riding the passenger cars. The standard passenger train has been sufficiently short that even one brakeman has been able to perform en route switching operations in any part of the train. The standard road freight train, on the other hand, has been of such long length that a brakeman has been needed at the head-end of the train to accomplish en route forward switching duties, and a caboose riding rear-end brakeman has been required to carry out en route switching operations at the rear of the train. Since the head-end brakeman customarily has ridden the locomotive of a freight train, freight engine crews have consisted of one more man than passenger locomotive crews.

The reason labor made no attempt to increase the number of head-end brakemen on multi-unit diesel freight trains probably could be traced to inter-union politics. Certainly, the head-end brakemen could have stated arguments as valid as those of the engineers and firemen for additional crew positions on multi-unit diesel locomotives. Since head-end brakemen generally have had an en route responsibility for observing the condition of the train (watching for hot journal boxes, broken couplings, derailments, etc.), they might have argued multi-unit diesel-powered trains were too long for one man to watch properly. They also
might have claimed head-end en route switching with multi-unit diesels was too complex an operation for one brakeman to perform. However, neither of these, nor any other arguments were advanced by labor to increase the number of head-end brakemen assigned to multi-unit diesel-powered freight trains.

Assuming a given level of traffic, multi-unit diesel-powered trains of extensive length meant fewer trains with fewer jobs for head-end brakemen, just as for engineers and firemen. This presents the question of why the bargaining agents of the head-end brakemen (Order of Railway Conductors and Brakemen and Brotherhood of Railroad Trainmen) did not seek to gain additional brakemen positions on multi-unit diesels. The answer, in this case, likely involved a desire by the brakemen unions to avoid a head-on battle with the Brotherhood of Locomotive Firemen. Management long has claimed that the head-end brakeman made the position of a diesel freight fireman unnecessary. This point is examined in detail in the ensuing discussion of this study. Thus even one head-end brakeman imperiled the existence of the fireman position. Any additional head-end brakemen aboard multi-unit diesels seriously would jeopardize, not only the demand of the firemen's union for assistant firemen, but also the union's demand for a basic diesel freight fireman position.

Railway labor's dilemma in this situation was that the presence of one locomotive crew position jeopardized the existence of another crew job and the union which represented it. The brakemen unions could depend for membership upon brakemen who rode the cars of trains, as well as those who rode the locomotives. The firemen's union could base its
membership roster only upon locomotive operating personnel. The Brother­
hood of Locomotive Firemen would fight vigorously to keep its men in the
freight diesel crews. The brakemen labor organizations undoubtedly
appreciated this and did not wish to battle the powerful Brotherhood of
Locomotive Firemen over the issue. There was already too much in-fight­
ing among the railway unions, and such labor disharmony only would impair
further concessions from management in the diesel era.

The Arguments Presented to the
1943 Diesel Board

Although the 1937 Firemen's Agreement was the first major manage­
ment-labor agreement of national scope involved with engine crew
requirements on non-steam power, it remained for the 1943 Diesel Board
to open wide the issues of diesel crew manning. Many of the arguments
introduced at the 1943 Board hearings were to remain unresolved for over
two decades. Other arguments, while not major issues when presented to
the 1943 Board, would grow to become very important problems in later
stages of the diesel dispute. Even some of those issues supposedly
officially settled by this Board, actually remained unsettled beneath
the surface, and served as future sources of irritation to labor or
management. This point reflects a significant characteristic of railway
labor problems. These problems often have a peculiar history of never
dying, in spite of formally proclaimed "Agreements" upon the pertinent
issues. A historical analysis of the diesel dispute reveals the
prominence of this frustrating feature of railway labor relations.
A major objective of the 1943 Board was to evaluate demands of labor for the assignment of assistant engineers and assistant firemen to diesel locomotives. The engineers' argument for assistant engineers on diesels was built primarily upon mechanical issues. They claimed complex en route maintenance requirements on diesel locomotives dictated that an engineer be aboard to patrol diesel engine rooms. This argument was destined to lose for a number of reasons. First, the engineers would have to prove the production and maintenance of locomotive power was a responsibility of theirs, rather than of the firemen. Thus the engineers would be fighting the traditional division of engine crew duties, wherein the engineer operated, and the fireman powered the locomotive. As pointed out previously, tradition has been an exceptionally powerful force in railroad labor relations. In addition, the firemen had the advantage of having a basic position on diesels guaranteed by the 1937 Agreement. However, the engineers challenged the ability of firemen to repair diesel mechanical malfunctions. On this issue the engineers had a strong case. The only difficulty was they were no more competent than firemen to perform diesel maintenance.

Even if engine room patrols had not been subject to a jurisdictional battle with the firemen, it would have been necessary for the engineers to prove crewmen could work full time in the engine rooms of moving diesel locomotives. Since the engineers apparently were not claiming that an assistant engineer was needed in the control cab, it must be assumed the extra engineer (assistant engineer) would be utilized
totally in the engine room. The author, in research for this study, investigated environmental conditions of diesel engine rooms while the locomotives were idling, at low-speed, and at high-speed. In all cases, particularly at full-power, the diesel engine room appeared to be a most undesirable place for prolonged work.

Engine room heat, noise, fumes, and close quarters would reduce the efficiency of any crewman to a low level very quickly. It just is not conceivable that any engine crew employee would desire to, or physically could spend his entire working day in such a place. Of the thirty-three engine service personnel interviewed for this study, not one man would comment favorably about the desirability of working in diesel locomotive engine rooms. Twelve of this group were firemen, who had performed such duties in diesel engine rooms as engine gauge checks, routine maintenance (fuse changing, etc.), and steam generator operation. Eleven of these men indicated it was always a pleasure to get out of the engine room and come back into the control cab. The eleven also were unanimous in stating that heat, noise, and fumes made diesel engine rooms intolerable places in which to spend much time. Two of these men commented that they were glad the new hood-type general

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24 Arbitration Board, Case A-3391-ARB, 140, p. 16.
26 Diesel engine room duties of engine service personnel involving machinery checks and routine maintenance are discussed in a later section of this study. For a technical and pictorial presentation of diesel locomotive steam generator crew duties, see: Wallace W. Abbey, "Steam Cools Your Train," Trains, August, 1951, pp. 14-17.
purpose diesels (discussed in Chapter II) had no engine rooms in which to work. One of the eleven firemen stated that even though there was no one to observe him when he was in the engine room, loafing there was "no pleasure." Only one of the twelve firemen interviewed commented that he did not mind working in diesel engine rooms, although he would not say anything favorable about working there either. Upon further questioning, this fireman admitted that he probably didn't mind being in the engine room of the diesel locomotive, only because it enabled him to be away from an engineer he did not like.

The twenty-one engineers and head-end brakemen interviewed for this study were also quite negative about diesel engine room environmental conditions, although they normally did not have occasion to be in there as often as the firemen. An engineer on the Northern Pacific summed up quite well locomotive crew reaction to the noise of diesel engine rooms, when he stated:

Anyone who has had occasion to visit the engine room of a modern diesel locomotive as it is being revved up knows what a deafening roar can be created by those giant engines. In spite of my years of working around them I have never quite got used to the noise, and I soon returned to the cab and closed the communicating door . . . .

This was the environment in which the Brotherhood of Locomotive Engineers proposed assistant engineers spend their full working day. No rational observer, under the circumstances, could agree with such a proposal.

There were still other factors that severely weakened the engineers' demand for assistant engineers. Since the assistant engineers

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27Hunter M. Picken as told to Phil Vander Horck, "I Came Out of This Alive," *Trains*, September, 1956, p. 22.
were to be aboard diesel locomotives primarily for maintenance purposes, the question was what maintenance they could, or would perform. These men would have as little knowledge of the intracacies of diesel machinery as the firemen, and thus would be of value only for the most minor type of repair. Assistant engineers assigned to diesels full time for maintenance purposes, hardly would earn their pay, if they could do little more than gauge checking, circuit breaker resetting, and fuse changing.

By 1943, diesel locomotives had reached a stage of technological development where major, and even minor, mechanical breakdowns en route were relatively rare. To emphasize this point, plus the dangers to man and machine of inexperienced personnel tinkering with diesel machinery, some roads, by the 1940's, were prohibiting engine crews from making any type of repair on an en route diesel locomotive. At the time of the 1943 Board hearings, a revolutionary type of diesel locomotive was in its initial design stage. The general purpose hood-type diesel which featured an engine enclosed only with a hood of metal (no enclosed engine room as on Covered Wagons - see Chapter II) and an open catwalk around it, was on the drawing boards of the Electro-Motive Division of General Motors. This locomotive specifically was designed to ensure that en route "tinkering" maintenance did not take place.

The discordant pattern of railroad inter-union relations the diesel was bringing about, easily could be seen in the arguments over labor demands for assistant diesel engineers and firemen. The

Brotherhood of Locomotive Engineers recognized the demands of the firemen's union for assistant diesel firemen presented a major obstacle to achieving its own desires for the assignment of assistant engineers to diesel locomotives. The situation was ideal for one of the bizarre kind of inter-union struggles that became characteristic of railroad labor relations in the diesel era. The Brotherhood of Locomotive Engineers proposed to the Brotherhood of Locomotive Firemen, that if the latter would withdraw its demand for assistant diesel firemen, it definitely would help the case for assistant diesel engineers. It was apparent the 1943 Board, at most, would recommend only one assistant position for diesel engine crews. The engineers knew they would have to prove to the firemen's organization that withdrawal of the assistant diesel firemen demand was in the firemen's best interest. The engineers' organization also was well aware of the antagonism of the firemen's union toward it, for demanding assistant diesel engineer positions.

Thus the Brotherhood of Locomotive Engineers indicated to the Brotherhood of Locomotive Firemen that assistant diesel engineer positions would benefit firemen more than any other party. The Brotherhood of Locomotive Engineers reasoned firemen would be promoted to assistant engineers to fill the assistant diesel engine positions. Certainly, fully qualified operating engineers would not step down to take the assistant engineer positions; the assistant engineer positions would have to be filled by promoted firemen. This, in turn, would allow new

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29 This unusual aspect of the assistant diesel crew position dispute was discussed with the author by a former official of Railroad W, on September 14, 1965.
men to take the firemen positions vacated by the promoted men, and, thereby, add membership to the Brotherhood of Locomotive Firemen. However, the engineers neglected to point out that, more than likely, the promoted assistant engineers would leave the firemen's organization and join the Brotherhood of Locomotive Engineers.

Under the circumstances, it was not surprising that the Brotherhood of Locomotive Firemen rejected the proposal of the engineers' organization. The Brotherhood of Locomotive Firemen had three major things to lose if it accepted the engineers' proposal.

First, it was possible that the assignment of assistant diesel engineers would jeopardize the basic diesel firemen positions won in the 1937 Agreement. Second, there was the question of whether the engineers had a strong enough case for the 1943 Board, or any other board, to recommend the assignment of assistant engineers to diesels. The firemen felt their case for assistant diesel firemen was much stronger than the assistant diesel engineer argument, as they believed engine power production was traditionally a fireman's job. The Brotherhood of Locomotive Firemen thus feared if it withdrew its assistant diesel firemen demand, the entire assistant diesel crewmen argument easily would be invalidated by management and rejected by the Board.

Third, the Brotherhood of Locomotive Firemen believed that while individual union members (firemen) would gain by their promotion to assistant engineer, the firemen's organization would suffer a severe loss of prestige in its battle with the engineers' union. The promoted firemen, with their assistant engineer rating, would be prime candidates
for membership in the Brotherhood of Locomotive Engineers. In addition, the assistant crew position would carry an engineer title, rather than a fireman caption. Since it was proposed that the assistant engineers would perform engine room duties, the firemen's claim of "exclusive rights" to diesel engine room work would be imperiled. From an overall standpoint, if the Brotherhood of Locomotive Firemen had accepted the engineers' proposal, it would have appeared as though the firemen's organization had succumbed on a major issue to the Brotherhood of Locomotive Engineers. The rivalry between the two powerful rail unions, by 1943, was far too intense to allow this to happen.

There is a particularly important implication in the rejection of the engineers' proposal by the firemen's organization. The Brotherhood of Locomotive Firemen had put its organizational welfare ahead of possible benefits to some of its individual members (promotion to assistant engineer). This action illustrated the importance this union placed upon its survival problem in the age of dieselization. The union leaders were determined to let nothing, including the welfare of individual members or other labor organizations, interfere with the continued existence and growth of the Brotherhood of Locomotive Firemen and Enginemen.

It is an interesting sidenote to the battles between the two engine crew labor organizations that not just members, but officers of the Brotherhood of Locomotive Firemen and Enginemen, held operating
engineer positions. Thus engineers helped lead and maintain the strength of a union which fought the labor organization primarily representing their craft. This only could happen in the railroad industry, where, as seen numerous times in this study, conventionality in labor relations takes a holiday.

The Brotherhood of Locomotive Engineers actually never had a chance in its bid to place assistant engineers upon single and multiple-unit diesel locomotives. Its arguments on this issue were extremely weak. The 1943 Emergency Board, accordingly, recommended against the employment of assistant engineers upon diesel locomotives. However, in 1945, the engineers' union again demanded the carriers assign an extra engineer to one to four unit diesel locomotives, weighing 200,000 pounds or more. The arguments were essentially the same as those expressed in 1943. Once again, the engineers' demand was rejected. Although, ever since, there has been an undercurrent feeling in the union that

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30 Upon promotion to engineer, a number of firemen have retained their membership in the Brotherhood of Locomotive Firemen and Enginemen. This can be attributed primarily to two factors. First, it usually has taken so many years for firemen to be promoted to engineers, the consequent higher average age of engineers meant higher Brotherhood of Locomotive Engineer group insurance rates. Second, since it has taken so long to move from fireman to engineer, some men have had the opportunity to build up positions of individual power in the firemen's organization. To counteract the promoted engineers who retained membership in the Brotherhood of Locomotive Firemen and Enginemen, the Brotherhood of Locomotive Engineers accepted firemen as members. However, these firemen have not been given the right to vote in organizational affairs, although the organization does represent them for bargaining purposes. (See Chapter III for various railway labor organizations and whom they represent.)

31 Reed C. Richardson, op. cit., p. 415.

32 Ibid., p. 416.
assistant engineers should be assigned to diesel locomotives, "this was
the last important stand" by the Brotherhood of Locomotive Engineers on
the issue.33

The Case for Assistant Diesel Firemen

As far as basic diesel firemen positions were concerned, the
Brotherhood of Locomotive Firemen was more annoyed by, than afraid of the
engineers' challenge of the 1937 National Firemen's Agreement. The
firemen knew the 1937 Agreement had set the precedent for the fireman
position on diesel locomotives; they also appreciated the strength of
precedent and tradition in railroad labor relations. On this basis,
the firemen's union felt the Brotherhood of Locomotive Engineers' demand
for assistant diesel engineers would not be an immediate serious threat
to the basic diesel fireman position.

The firemen, nevertheless, considered the engineers' action on
this issue alarming from one standpoint. It showed that the firemen
could not depend, in any way, upon the engineers for future support on
diesel manning problems. In fact, it appeared to the Brotherhood of
Locomotive Firemen that the engineers could be considered as hostile a
force as management in the diesel crew dispute. Officials of the fire-
men's organization were also somewhat apprehensive as to just how long
the precedent set by the 1937 Agreement for basic diesel firemen would
survive, if both management and a major labor organization were attacking
it. Even though railroad labor precedent had shown its strength over

33 Ibid.
the years, it had not been subjected to the kind of beating it would take in the diesel controversy.

As discussed in Chapter III, officials of the Brotherhood of Locomotive Firemen, over the years, have been a farsighted group; the firemen's organization has tended to act immediately on problems with distant future implications. With obvious concern for the future security of basic diesel firemen, and for its immediate desire to obtain assistant diesel firemen, the Brotherhood of Locomotive Firemen prepared a strong case for the 1943 Board Hearings. The engineers had built their challenge of the 1937 Agreement, and their hopes for engineer job security in the diesel era on an assistant diesel engineer demand. Since it was apparent any kind of locomotive required an engineer, the Brotherhood of Locomotive Engineers was trying to protect against train and job cutting multi-unit diesels. The firemen were in a more desperate position. According to management, and now even the engineers, diesels did not require the services of any firemen. Thus demands for an assistant fireman on multi-unit diesels added insult to injury, as far as management and the engineers were concerned. It should not be assumed the engineers and management were united at the 1943 Board phase of the diesel dispute, just because they were both fighting diesel firemen demands. On the contrary, they vigorously were fighting each other over assistant diesel engineer and wage issues.

The firemen's organization knew the assignment of assistant firemen to diesel locomotives substantially would strengthen the long run security of basic diesel firemen positions, as well as protect
against job-cutting multi-unit diesel engines. If assistant firemen were required on diesels, there obviously would be a need for the basic diesel firemen positions. Strangely enough, as this discussion will show, the existence of the basic diesel fireman position also enhanced the Brotherhood's argument for assistant diesel firemen. The firemen's organization realized it had to convince the 1943 Emergency Board of the need for an assistant crew position on multi-unit diesels before it could claim such a position should be filled by a fireman. It should be remembered that in contrast to the engineers' demand for an assistant engineer on even one diesel unit, the firemen asked for the assignment of an assistant fireman to only multi-unit diesels. The weakness of the Brotherhood of Locomotive Engineers' argument for assistant diesel engineers appears both to have aided and hindered the firemen's attempt to gain assistant diesel firemen positions. The inadequate assistant engineer argument likely made it easier to convince the 1943 Board that an assistant diesel crew position should be filled by a fireman. At the same time, however, the weak argument of the engineers on the issue jeopardized the case for the creation of such a position.

The Brotherhood of Locomotive Firemen and Enginemen had decided to build its 1943 Emergency Board case for assistant diesel firemen upon safety and operational efficiency considerations. The firemen had realized the inherent weaknesses of their 1937 argument for non-steam firemen, and thus had shifted the justification of their demands for diesel firemen from relief of unemployment to more rational safety and
operational efficiency reasons. This 1943 safety-efficiency position of the Brotherhood of Locomotive Firemen would continue as the union's basic argument for non-steam firemen throughout the diesel crew dispute. It is to be expected, in fact, that after the expiration of the Congressional two year peace period in 1966, the firemen will base renewed attempts to preserve their craft and union upon the same safety-efficiency arguments expressed in 1943. Even with appropriate technological updating, there probably will be little change from the 1943 position.

The philosophy of the firemen in the presentation of their case to the 1943 Board appears to have been an attempt to obtain the assignment of assistant diesel firemen, without, in any way, jeopardizing the basic diesel fireman position they had won in 1937. The case seems to have been developed to prove that the existence of basic diesel firemen positions necessitated the assignment of assistant diesel firemen. However, in the event the Board recommended against the assistant fireman position, the union's argument was slanted so the negative Board recommendation would make the basic diesel fireman's job appear more important and more difficult than ever.

Although the firemen outwardly were claiming during the 1943 hearings that they desired assistant firemen only on multiple-unit diesels, the implications of their specific arguments on the issue seemed to require the assignment of assistant firemen to even single-unit

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34 Arbitration Board, Case A-3391-ARB, 140, p. 16.

diesels. The engineers were demanding the assignment of assistant engineers to single and multiple-unit diesels. Therefore, the overt argument of the firemen's union for the assignment of assistant firemen to multiple-unit diesels only, may have been an attempt to make its demand appear more reasonable than that of the engineers.

In its argument for assistant firemen positions, the firemen's union, in contrast to the engineers' organization, did not get trapped in the diesel engine room dilemma. There was no claim by the Brotherhood of Locomotive Firemen that assistant firemen should spend all of their time in the engine rooms of en route diesel locomotives. The Brotherhood did acknowledge the assistant and basic diesel firemen had duties in the engine room, but the union developed its argument to show control cab responsibilities for them also. The very fact that the firemen's organization was being rather specific on diesel firemen duties in the presentation of its case to the 1943 Board was significant. As indicated previously, earlier claims by the Brotherhood of Locomotive Firemen for diesel firemen positions were noticeably lacking in a statement of any specific diesel firemen responsibilities. In general, it appears the firemen presented a well thought out, and well organized case to the 1943 Board on behalf of their demands.

The basic issue around which the firemen built their case involved the watching rule. The watching rule dictated that on certain high-speed passenger trains a fireman had to be in the cab with the engineer for lookout duties when the train was in motion. This rule had a very unpretentious birth in the 1937 National Firemen's Agreement, which in
no way reflected upon the importance it would have in the next thirty years of the diesel crew dispute.

The 1937 Agreement had stated that a fireman, taken from the ranks of firemen, should be employed on diesel locomotives powering streamlined or main-line through passenger trains; a note to this rule of operation stated that the term "main-line through passenger trains" included only trains which made few or no stops. Actually this was the provision which placed firemen on streamlined rail car passenger trains, regardless of the weight of the engine. The "main-line through passenger train" phrase in the provision was to become a major thorn in future diesel crew negotiations, although the definition of a "streamlined train" would create its share of problems too. No mere note as stated in the 1937 Agreement would suffice to disentangle the labor complications this phrase would cause. The watching rule grew out of a broad interpretation by the firemen's organization of this basic, but simple provision of the 1937 Agreement. Railroad labor history, with all of its unusual and unexpected turns, at least in one regard, seems to have followed a general pattern. Management has tended to interpret railroad labor agreements very narrowly, whereas the unions have placed the broadest possible meanings upon the phraseology of these agreements. The ensuing discussion of the watching rule issue illustrates this characteristic of railroad labor relations.

36 Arbitration Board, Case A-3391-ARB, 140, p. 15.
Recommendations of the 1943 Board

In reference to the crew requirements of diesel locomotives, the 1943 Board recommended: 37

A. That on multiple-unit diesel locomotives powering high-speed, streamlined, or main-line through passenger trains, two men should be in the cab at all times when the train is in motion. If compliance with this recommendation requires the services of an extra man in the engine room to perform the work customarily carried out by firemen, he shall be taken from the ranks of the firemen. 38

B. That on multiple-unit diesel high-speed main-line through passenger trains, safety of operation demands, whenever the train is in motion, the presence of the fireman in the cab.

C. That with respect to multiple-unit diesel freight operation, the situation appeared quite different. The locomotive customarily operates at a slower rate of speed. It hauls no passengers. The necessity of having a second man in the cab continuously is met by the presence of the head-brakeman, who customarily does signal watching when the fireman finds it necessary to patrol the engine room.

D. That an additional man is not needed on multiple-unit diesel locomotives powering freight trains, but that if a carrier finds it necessary to add a man to accomplish the work customarily done by firemen, such man shall be taken from the ranks of the firemen.

37 Ibid., pp. 16-17, and Memorandum of Agreement, August 13, 1943, pp. 1-2. (The August 13, 1943 Agreement, was made subsequent to the 1943 Emergency Board report of May 21, 1943, and personally was instigated by President Franklin D. Roosevelt to settle disagreements over the Emergency Board recommendations. A letter from the President, expressing his concern and interest in the 1943 diesel crew dispute, is cited earlier in this chapter).

38 Note: The 1943 Board recommendations cited herein, neither are designated, nor arranged, in the exact format as the official report of the Board. They are arranged in this study to facilitate the pertinent discussion.
The diesel crew recommendations of the 1943 Emergency Board gave both victory and defeat to the firemen, depending upon the specific issue involved. Recommendation A was the first formal statement of the watching rule, as such. However, the recommendation was so nebulous, it opened the door for a prolonged dispute over interpretation of its wording. The most difficult thing to understand about this recommendation, as well as the others, is the reference only to multiple-unit diesel locomotives. It would appear if two men were needed in the control cab for safety purposes, it should make no difference whether the diesel locomotive was operated as single or multiple-unit power. Even a single-unit diesel, in 1943, had an engine room that might require a fireman's service and, consequently, take him from the control cab. Perhaps, the Board's statement on this point was in deference to the fact that the Brotherhood of Locomotive Firemen was demanding assistant firemen only on multiple-unit diesel locomotives. If this was the case, then the Board, in essence, was implying the two men in the cab watching rule was important only in labor negotiations, and not in actual safety of train operations.

As indicated earlier in this chapter, the existence of the basic fireman position enhanced the chances for the assignment of assistant firemen to diesels. This condition was due to the watching rule provision which the firemen had been demanding the 1943 Board formalize in its report. If the Board recommended the adoption of the watching rule to govern the operation of certain diesel-powered passenger trains, two men would have to be in the control cab when the train was in motion. This would mean the basic fireman would have to be in the control cab
with the engineer. Since the basic diesel fireman traditionally had been performing certain en route engine room maintenance duties, it was clear an additional crewman would have to be aboard to carry out engine room work while a watching rule train was underway.

The 1943 Board, therefore, not only recommended the formal adoption of the watching rule, but it also recommended any additional crew member required because of the provision, come from the firemen ranks. The fact that, by 1943, en route engine room maintenance on diesels was becoming increasingly unnecessary, was unimportant. The basic diesel fireman had been performing engine room patrols since 1937, and in railroad labor relations, precedent or tradition has been a more dominant factor of control than technological progress.

Recommendation A of the Board was a victory for the firemen, in that it formalized the watching rule, and indicated any additional crewmen required by the "rule" must come from firemen ranks. The engineers definitely had lost in their bid for assistant engineers on diesel locomotives. However, the firemen's union had not gained a complete victory on the assistant diesel firemen issue. Assistant firemen would be required only on watching rule multi-unit diesel-powered passenger trains, in order to carry out necessary diesel engine room patrols and en route maintenance. The number of assistant firemen to be assigned to diesels, would be a direct function of the number of passenger trains declared subject to the watching rule, and the en route locomotive maintenance required by these trains. The Brotherhood of Locomotive Firemen thus made a great effort to bring passenger trains under the watching rule provision. In this endeavor, the union found a major
force of resistance, not only in railroad management, but in the manufacturers of diesel locomotives as well.

As a result of the Board's use of the term "multi-unit diesel" in its statement of the watching rule, a railroad could avoid subjecting a high-speed passenger train to the rule, simply by powering the train with a single-unit diesel. The Board's recommendation A, with its wording of, "If compliance with this recommendation requires the services of an extra man in the engine room . . . ," left another escape clause through which the railroads could avoid assigning a third engine crewman to those trains covered by the watching rule. The key word was "if." In the event en route diesel engine room work could be eliminated, there would be no requirement for a third man in the engine crews of watching rule trains. This condition placed the entire problem squarely in the hands of the diesel locomotive manufacturers.

The manufacturers responded to this charge by designing diesels that required virtually no en route maintenance. Even engine room patrols were made unnecessary through the installation of automatic cab alarm systems on the new diesels. Labor job preservation arguments dependent upon en route diesel maintenance, were to suffer the severest blow of all, from the introduction of the engine-roomless hood-type of diesel locomotive. Even though the Board had given recognition to the tradition of firemen performing certain en route diesel maintenance duties, it, nevertheless, had given the railroads a means of avoiding the use of watching rule train assistant firemen, through diesel

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locomotive technological improvements. It appears as if the Board was
trying to please the firemen through recommending the watching rule, and,
yet, please the railroads by leaving a means of escape from the crew
implications of the rule. Regardless of the intent of the Board, the
wording of the watching rule recommendation gave the chance to diesel
locomotive manufacturers to make the rule virtually meaningless. As
pointed out above, the locomotive manufacturers would do just this, much
to the chagrin of labor. The powerful tradition of firemen performing
duties in diesel engine rooms, finally would be overcome by technological
advances in the design of the diesel locomotive. This situation marked
a major deviation from the usual relationship of railroad traditions
and railroad technological innovations.

Even in the case of watching rule trains requiring en route loco-
motive maintenance, the carriers had a way of evading the requirement
for a third man in the diesel crew. The watching rule train could be
stopped, while the basic fireman accomplished the necessary engine room
repairs. The carriers felt such infrequent train delays would not be as
costly as the assignment of full-time assistant firemen. However, the
firemen's union contended such repair stoppages of high-speed trains
would be extremely detrimental to the efficiency of the nation's trans-
portation system.

Everything considered, the firemen hardly had won even a moral
victory on the watching rule issue. However, the most significant
defeat for the Brotherhood of Locomotive Firemen in the 1943 Board
recommendations, was in reference to the manning of diesel freight
locomotives. This defeat, would become increasingly significant to the
firemen, as competing modes of passenger transportation forced the railroads to curtail their passenger train operations. Board recommendation D stated that, if an additional man was needed on multiple-unit diesel freight locomotives, he would be assigned from firemen ranks. However, Board recommendations C and D virtually nullified any argument for an additional man on diesel freight locomotives, single or multiple-unit. The Board stated that the slower speed of freight trains eliminated any requirement for application of the watching rule to such trains. The Board further stated in recommendation C that, even if a second man continuously was required for lookout duties in the control cab, the presence of the head-end brakeman would suffice. The fireman in diesel freight operations would be free, in any event, to perform en route engine room duties. In effect, the Board recommended diesel freight crews comprise three men, including the engineer, fireman, and head-end brakeman. This was exactly the same crew consist traditionally used on freight steam locomotives.

These recommendations of the Board, coupled with technological advances of the diesel, left little chance for the assignment of assistant firemen, or assistant engineers for that matter, to diesel freight locomotives. The most important element in the Board's recommendations on assistant freight diesel crewmen was the reference to head-end brakemen. It appears this was the first time the head-end brakeman position formally was injected into the diesel crew dispute. In the report of the 1943 Board, the head-end brakeman only imperiled the assignment of assistant firemen to diesel freight crews. It would not
be long before the head-end brakeman would imperil the existence of the basic diesel freight fireman position. Undoubtedly, officials of the firemen's union were quite aware of this eventuality; as previously discussed, this may have been why the brakemen labor organizations did not demand the assignment of additional head-end brakemen to multiple-unit diesel locomotives.

The report of the 1943 Board also appears to have contained the first formal statement in the diesel crew dispute on the firemen's claim of "traditional exclusive rights" to locomotive power production. The Board's statement on this subject, although vague, at least indicated the path future negotiations and boards would take on the issue. In one respect, the Board weakly implied a recommendation favorable to the firemen on their claim of exclusive craft rights to the production of engine power. The Board stated in its recommendation A that, if an extra man is required in the engine room to perform work "customarily" accomplished by firemen, such a man should be assigned from fireman ranks. The fact that this statement mentioned the engine room and fireman together, gave some credence to the firemen's claim of exclusive rights to locomotive power production.

However, the Board's use of the work customarily, in regard to firemen duties, without further definition, evaded the issue and set up a pattern of circular reasoning that future negotiations would have to contend with. The question that formally had to be answered was, what the firemen's duties traditionally were, and whether there was any carry over of these duties from steam to diesel operation. The word customarily used without definition, was so vague and subject to
interpretation, that it opened new areas for dispute. Customary firemen work would have to be delineated specifically, before there would be any hope of settling the controversy over duties of diesel crewmen. The firemen's claim to all aspects of engine power production was contested by the railroads, by the engineers, and by shop crafts which wanted their men to perform en route diesel maintenance.

By the late 1950's, this whole issue would be of little significance, due to major technological improvements in the diesel locomotive. Diesel power production would become so automatic and efficient that engine crewmen, no matter what their craft or skill, hardly would be involved with it. However, in the Forties and early Fifties, the technological state of the diesel was such that it still required some infrequent en route engine maintenance, as well as a few elements of man-accomplished power production. Although the 1943 Board complicated the problem of crew rights to engine power production by introducing the terminology, but not defining customary firemen duties, it did set the direction for future boards to take on this issue. From the firemen's standpoint this direction was not good. Even though the 1943 Board had mentioned the engine room and fireman together, it also had implied in the body of its report that firemen lacked any exclusive right to engine room work. The Board further stated that employees other than firemen, on occasion, had performed en route diesel maintenance, and even some

\[40\] Ibid., p. 31.
locomotive operational duties. Later boards, to the disadvantage of the firemen, were to build some of their findings on this groundwork.

The Post Board Regional Agreements of 1943

As expected, there was disagreement between the parties involved over the 1943 Board recommendations on diesel crew manning and engine crew pay schedules. At the personal urging of President Roosevelt, a series of regional negotiations took place between the railroads and the Brotherhoods to work out these points of disagreement.

The formal agreements which resulted from these regional conferences did not appear to conflict with either the 1937 National Firemen's Agreement, or the basic findings of the 1943 Emergency Board. Instead, the regional agreements supplemented the 1937 Agreement with statements on the watching rule and the definition of a locomotive. There were also important sections of the regional agreements which dealt with controversial pay schedules of both steam and diesel engine crews. The points of agreement on engine crew pay schedules, however, had no particular bearing on the dispute over manning of diesel locomotives.

The watching rule, with its possible requirement for an additional fireman on multi-unit passenger diesels, was incorporated into the regional agreements in line with the recommendations of the 1943

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41 Ibid., p. 31.
42 Letter from President Roosevelt to Mr. Pelley, May 29, 1943.
43 Ibid.
Board. Just as the 1943 Board also had recommended, with the exception of the watching rule provision, these agreements contained no requirement for assistant firemen or assistant engineers on diesel locomotives, single or multiple-unit. The carriers and labor also assented to the condition that additional or assistant firemen would not be required on straight-electric locomotives in multiple-unit operation. There were important modifications in the regional agreements to the relatively simple statement in the 1937 Agreement on the requirements for diesel firemen. These modifications were presented under the general subject of the definition of a locomotive. This undoubtedly was the result of pressure by the firemen's union for the assignment of firemen to any motive power designated as a locomotive. The 1943 regional agreements thus became the basis for the continuing controversy over the definition of railroad locomotives, and the consequent assignment of firemen to them.

The 1937 National Firemen's Agreement had stated that firemen would not be required on diesel locomotives weighing less than 90,000 pounds on drivers in any class of service, except streamlined or main-line through passenger trains. The 1943 regional agreements, in their definition of a locomotive for purposes of firemen assignment, stated

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44 Memorandum of Agreement, August 13, 1943, pp. 1-2. (This Agreement is considered as typical of the regional agreements made following the 1943 Emergency Board report).

45 Ibid.

46 Memorandum signed by the International President of the Brotherhood of Locomotive Firemen and Enginemen and the Chairman of the Eastern Carriers' Conference Committee, Washington, D. C., August 13, 1943.
that internal combustion (diesel) and electric motive power units of less than 90,000 pounds on drivers used in yard service only, would not be considered as locomotives. Since every power unit designated as a locomotive required a fireman, all diesel road engines, regardless of weight, as of the date of the agreement, required a fireman. Only yard diesels of less than 90,000 pounds could operate without firemen after 1943. These regional agreements thus assured the Brotherhood of Locomotive Firemen that a fireman would be assigned to every diesel locomotive in road passenger or freight service, and in heavier power yard service as well.

The reason for this provision in the regional agreements is clear. In 1937, the bulk of diesel locomotives were used only in streamlined passenger or yard service. There were few yard diesels at the time weighing less than 90,000 pounds. The light diesels were in use powering streamliners, and the 1937 Firemen's Agreement encompassed them. By 1943, however, diesels were utilized in all types of road service. The firemen's organization desired to ensure that, if lightweight diesels (less than 90,000 pounds) should be used in "local" passenger or road freight service, a fireman would be required aboard. This provision was not an important victory for labor, and management went along with it, because new diesel locomotives were tending to get heavier, not lighter in weight. It was simply a case of the Brotherhood of Locomotive Firemen planning for any eventuality that could impair the job security of its members. Labor could not be sure at this point in the diesel

\[47\] Memorandum of Agreement, August 13, 1943, p. 2.
dispute, just what the railroads and locomotive manufacturers might connive. The Brotherhoods had reason to be apprehensive in this regard. The hood diesel which, in part, was designed to curtail labor's argument for diesel firemen, would soon make its appearance on locomotive rosters.

The Dispute Continues

Although the various regional agreements of 1943 did eliminate the immediate threat of a wartime rail strike, many of the controversial issues continued to seethe. The unions temporarily had yielded because of war time pressures. Both the firemen and engineers especially were disturbed by their lack of success in obtaining additional diesel crew positions. The total diesel crew problem, still alive and unsettled, was being aggravated further by constant technological changes in the diesel locomotive. From 1945 through 1948, there were frequent minor eruptions in the relative post war calm of the diesel dispute. Generally, these flare-ups involved renewed demands by the engineers and firemen for additional diesel crew positions. Although troublesome without question, these demands, and their consequences, were mild compared to what would come in 1949, and thereafter. It was somewhat like the eye of a storm; an uneasy calm existed, but great turmoil inevitably was ahead. In 1949, the relative calm was shattered; the diesel crew dispute again broke wide open. Rail strike threats were the rule, rather than the exception. Railroad labor could contain itself no longer. It was time for an all out attack upon the diesel, its manufacturers, and the railroads. There would be no let up in this labor attack until victory or absolute defeat came for the unions involved.
Not even a truce would come until 1964, and as discussed in Chapter III, the fight can be expected to continue after the expiration of this truce (Congressional two-year peace period) in 1966.

The Diesel Emergency Boards of 1949

Although the engineers made their last major stand on the assistant diesel engineer question in the middle Forties, they, henceforth, would not let the issue completely die. Negative emergency board findings and constant defeats in negotiations could not deter the engineers from some degree of persistence on this issue. It certainly must have been obvious to the officers of the Brotherhood of Locomotive Engineers that their case for assistant diesel engineers was weak, if not hopeless. Therefore, it would seem that the engineers kept the assistant diesel engineer issue alive, primarily to harass the rival Brotherhood of Locomotive Firemen and its demand for assistant diesel firemen. In 1949, the engineers decided to renew their demand for extra engineers on diesel locomotives.\(^{48}\) Even though the engineers' union apparently did not intend to make a strong stand on this renewed demand, a considerable amount of labor tension, nevertheless, was created when the carriers repudiated the union's demand.\(^{49}\) So much tension, in fact, developed that Emergency Board Number Sixty-Eight was convened to investigate the situation. In a report to the President of the United States dated April 11, 1949, this Board like its predecessors, completely


\(^{49}\) Ibid.
rejected the engineers' argument. Following its usual pattern of behavior on this issue, the Brotherhood of Locomotive Engineers, in turn, rejected the report of the Emergency Board. However, the engineers did not react violently in rejecting the Board's report. They had made their point and were willing to let the issue rest for a while.

The major railroad labor crisis of 1949, and the severest since 1943, was created by the Brotherhood of Locomotive Firemen and Engine-

men. The firemen had decided to make another vigorous attempt to gain assistant diesel firemen positions, based upon the safety implications of the previously established watching rule. Thus the Brotherhood of Locomotive Firemen demanded a fireman be present, at all times, in the control cab of every moving road diesel (passenger or freight), regardless of whether an engineer and head-end brakeman were also in the cab. This was an obvious slap at the 1943 Emergency Board statement that, in road freight service, a head-end brakeman could carry out any watching requirement, while the fireman was in the engine room. In conjunction with the demand based upon the watching rule, the Brotherhood also renewed its demand for the assignment of assistant firemen to multi-unit diesel locomotives. This marked the first major effort by the firemen on this issue since 1943. The Brotherhood of Locomotive Firemen further requested the assignment of firemen to the smaller switching diesels and

\[50\]
Transcript of Proceedings of the Presidential Railroad Commission, p. 33.

\[51\]
Ibid.

\[52\]
Ibid., and Lewis W. Britton, op. cit., p. 327.
rail cars exempted from a fireman requirement by the 1937 and 1943 agreements. Extraneous to this discussion, but within the set of demands made by the firemen in 1949, was a request to eliminate wage differentials of firemen serving on electric and oil-burning steam locomotives.

Upon the demands of the firemen reaching the strike threat stage, President Harry S. Truman established Emergency Board Number Seventy in February of 1949, to investigate the dispute. The arguments presented to this Board were much the same as those expressed to the 1943 Emergency Board. Perhaps, the greatest change from 1943, was in the diesel itself. Technological refinements of diesel motive power seriously had weakened arguments of the firemen concerning en route locomotive maintenance.

On September 19, 1949, Board Seventy submitted its report to the President, wherein it rejected all demands of the firemen. In its basic statement of recommendations and findings, Board Seventy did not differ too significantly from the reports of earlier boards. However, the general philosophy and clarification of issues expressed within the report of Board Seventy, made this report one of the most important statements ever made in the diesel dispute. As the ensuing discussion will indicate, Board Seventy gave a new starting point and a new direction to a controversy previously going in circles.

At this point in the dispute, near panic appeared to be rampant on both sides, due primarily to major technological advances in the diesel locomotive. Labor was frantic over these improvements in diesel design, as they obviously weakened en route maintenance and power

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53 Ibid.
production arguments in the diesel crew dispute. Not only were arguments for extra crew positions greatly imperiled, but in the case of the firemen, the basic crew position was in a precarious situation. Management was just as frantic over these diesel improvements as labor, but for a totally different reason. The railroads feared the vast opportunities for increased operating efficiency provided by the new diesels, would be nullified by both obsolete labor agreements, and the current demands of railroad labor. Management's fear and frustration, in this regard, resulted in actions that further antagonized and alienated railroad labor. It is important to note that by the late Forties, the railroads seriously were feeling the impact of competitive modes of transportation. Any increase in operating efficiency might facilitate railroad efforts to regain some competitive advantage in the nation's transportation network.

This was the environment into which Emergency Board Seventy injected its report. Although the report was not viewed favorably by the firemen, it did establish some degree of rationality to guide the further pursuit of a solution to the diesel problem. The most significant statements in the report of Board Seventy were those involving management and labor prerogatives in dieselized railroad operations. Some clarification in this matter was long overdue, as it would seem that a specific definitive statement on the rights of management and labor was the logical starting point in settling the total diesel dispute.

In a sense, Emergency Board Seventy was forced by management to make a statement of clarification on management and labor rights in
determining diesel locomotive crew manning requirements. The railroads, in presenting their case to the Board, contended diesel crew manning was not a subject for collective bargaining, and that management alone had the responsibility to make decisions on locomotive crew requirements. Although the Board neither would agree nor disagree with management's argument, it did state that there was "cogency" in the railroad position in the matter. It was clear the Board did not wish to make a definite formal statement on management's diesel crew prerogatives claim. However, the use of the word cogency in the Board's report regarding the management claim, was highly indicative of the Board's feeling on the issue. In addition, the Board stated in its report: "... management has its own functions to perform in our system of production." This was the first time that an investigative board, in any way, had given credence, or even alluded, to the right of the railroads to determine composition of locomotive crews.

Not only did Board Seventy reject the union demand for assistant diesel firemen, it also repudiated the firemen's claim of exclusive engine room work rights. Although the 1943 Board had questioned the exclusive rights of firemen to perform engine room work, the 1949 Board made an even stronger statement on the issue. Board Seventy commented in its report to President Truman on the firemen's claim: "... Proof of an exclusive right to any work in the engine room - a prerequisite

54 Lewis W. Britton, op. cit., pp. 327-328.
55 Ibid.
56 Ibid.
to its pre-emption by any craft - is wholly lacking in the case presented." In effect, the Board was implying that management had the right to assign whomever it desired to diesel engine room duties.

One of the most interesting and controversial statements in the report of Board Seventy concerned the relationship of locomotive technological development to engine crew job opportunities. Both the engineers and firemen had been basing a significant portion of their demands for extra diesel engine crewmen on greater speed and power capabilities of diesel locomotives (relative to steam locomotives). In this regard, however, Board Seventy commented:

Diesel locomotives can haul heavier trains at a higher average speed, even when, as is generally the case, maximum speeds are not increased. There may be fewer jobs for a given volume of traffic. Such a result, however, is not peculiar to dieselization. It has long been a concomitant of the steady development of more powerful and more effective steam locomotives.58

This statement by the Emergency Board certainly cast doubt upon labor arguments for additional diesel crewmen based on the job-cutting potential of diesel locomotives. The Board, by implication, was indicating, even though the development of faster and more powerful steam locomotives had reduced the total number of trains and, correspondingly, steam crew job opportunities, labor had not demanded additional crew positions on steam motive power. The unions had waited for the diesel to appear before coming alive on this matter.

57 Arbitration Board, Case A-3391-ARB. 140, p. 32.
58 Lewis W. Britton, op. cit., p. 329.
By 1949, the steam engine had reached its zenith of technological perfection. Late model steam locomotives could attain speeds as high, or higher than the maximum speeds of diesels. However, diesel-powered trains often were able to maintain a higher average speed than steam-powered trains over a long mileage run. This primarily was due to the refueling (coal or oil and water) and engine change or servicing stops, usually necessary in steam operations.

In reference to the Board's implication that the development of heavier power, train-cutting steam engines, did not bring forth union demands for additional crewmen on steam locomotives, some clarification is necessary in fairness to labor. There is no doubt the later model steam engines had far greater pulling power than their predecessors, particularly, compared to the steam locomotives of the nineteenth century. However, a comparison of the increase in train length as steam locomotives improved, with the increase in train length after the appearance of the diesel, reveals why labor had reason to become concerned so suddenly over the job-cutting potential of diesel motive power. In the period extending from the early 1900's to the early 1950's, the maximum size of steam-powered freight trains roughly had jumped from fifty cars to slightly over 100 cars. By the early 1960's, the author observed diesel-powered freight trains of well over 200 cars; in addition, many of these cars had far greater hauling capacity than those used during the steam era.

The key to the difference in lengths of steam and diesel-powered trains is not a direct comparison of the power of a single diesel unit with the power of a single steam locomotive; rather, as discussed
previously, the key to the situation involves the multiple-unit capability of the diesel locomotive. There were steam locomotives which had as much, or more pulling power than even large single-unit diesels, but there any aspect of equality in diesel and steam power ends. Whereas a large number of individual diesel locomotives could be operated together, it was impractical because of coordination difficulties to more than triple-head steam locomotives. Unlike multiple-unit diesels, whether double-headed or triple-headed, each steam locomotive required a separate engineer and fireman. It would appear that on this particular point, the comments of Board Seventy were misleading, if not blatantly unfair to labor.

Outside of its apparent lack of perception regarding the potential power differential between steam and diesel locomotives, Board Seventy brought the diesel crew dispute back to the world of reality and reason. Its statements on management rights in regard to engine crew manning were either weak or implied, but at least, for the first time, something had been said in this regard. Railway labor seemed to have been usurping management prerogatives at every opportunity for some time. Although the unions justified such action on safety and operational efficiency grounds, their real motivation, in most cases, was job preservation. Railroad management, in many ways, never really strong and effective, needed considerable shoring up in the area of management rights in labor relations. The implied recognition by Board Seventy of certain management rights in diesel crew manning, seemed to have given the carriers a new confidence and new approach for handling diesel crew negotiations with the unions.
A distinct change in the pattern of negotiating the dispute was clearly necessary. Railway labor relations had deteriorated to the point where the railroads were not effectively performing their vital role in the nation's economic system. Several railroad officials commented to the author that, at the time, they had distinct fears of railroad nationalization, if the situation did not improve within the next few years.

The Aftermath of Board Seventy

The Brotherhood of Locomotive Firemen, of course, was dissatisfied with the report of Board Seventy. All of the union's demands had been rejected and, in addition, the Board had denied the firemen's exclusive rights to perform engine room duties. Immediately after the Board had submitted its report to President Truman, the firemen threatened a national rail strike to show their dissatisfaction with the Board's findings. The President of the firemen's union, Mr. David Robertson, stated that his organization would strike every major railroad in the nation, if additional firemen were not assigned to diesel locomotives.\textsuperscript{59} He said that additional firemen were needed on diesels to "secure safety on the railroads."\textsuperscript{60}

A basic diesel fireman position had been established by the 1937 National Firemen's Agreement. However, that position was established with the streamlined rail car train diesels primarily in mind. Road freight diesels were still in the design stage, so they generally were

\textsuperscript{59}Ibid.
\textsuperscript{60}Ibid.
not considered in the negotiations. From the very introduction of road freight diesels, the fireman position was in jeopardy. Since there was no fire to stoke, and a head-end brakeman was available in the cab for lookout duties, the diesel freight fireman had to rely upon engine room work as the major justification for his position. By 1949, diesel locomotives had reached a stage of technological development wherein engine room crew duties were rare, if existent at all. In addition, it was being argued strongly by the railroads that the presence of the head-end brakeman made it unnecessary to have a fireman in the freight diesel cab for lookout duties. As early as 1943, an Emergency Board had given official recognition to this claim of the carriers.

As usual, the firemen's organization was farsighted. The future of railroad passenger service was dismal; it was rapidly succumbing to other modes of transportation, particularly in the Eastern half of the nation. It was clear the railroads desired to eliminate as much passenger service as the various governmental agencies concerned would permit. The railroads were determined to build their future on freight service. The implications of this situation were of grave concern to the firemen. The diesel fireman position was relatively secure only on the passenger diesel which did not have a head-end brakeman assigned to the control cab. Action had to be taken immediately to protect the imperiled diesel freight fireman position. The first step was to reject the findings of Emergency Board Seventy.

The Brotherhood of Locomotive Firemen, accordingly, claimed diesels had so increased freight train speeds that, for safety purposes, the watching rule provision should be extended to cover freight, as well
as passenger trains. The union felt the broadening of the watching rule to freight service would be a way of not only protecting the basic diesel freight fireman position, but also a means of securing assistant diesel freight firemen positions. The desperate arguments of the firemen on this issue were very weak for a number of reasons. First, even if a crewman was required for constant watching-lookout duties on a freight diesel, the head-end brakeman was in the cab, and could perform such a function. Second, with the diesel requiring virtually no en route maintenance, and having most of its equipment automatic by 1949, there would be little reason for having a fireman aboard for mechanical purposes. Even if the fireman temporarily had to be in the engine room, the head-end brakeman could perform the lookout function until the fireman returned. Third, diesel-powered freight trains were not necessarily attaining higher maximum speeds than steam-powered freights. By 1949, there were steam-powered freight trains that attained or exceeded the maximum speeds of diesel-powered freight trains.

The strategy of the firemen in rejecting the report of Board Seventy appears to have been aimed at protecting the basic diesel fireman position on all types of diesels. The immediate threat of a national rail strike, if additional firemen were not assigned to diesels, probably had no other objective than to cloud the whole issue. It is interesting to note that the firemen seemed to make their greatest gains in the diesel dispute, when confusion ruled the negotiations. The often vague and unrealistic arguments of the firemen's organization seemed to require confusion to even be considered, much less to be concurred with. In this case, the firemen probably believed that if they raised enough havoc over
the assistant diesel firemen issue, they would be able to protect their basic diesel firemen positions. As long as the negotiations were involved with assistant diesel firemen, attention of the carriers might be diverted from passenger, freight, and yard basic diesel firemen positions.

Another showdown in the diesel dispute was imminent. This would be a test of strength between the logic of Board Seventy and the confusion tactics of the firemen. On October 9, 1949, the railroads and the Brotherhood of Locomotive Firemen indefinitely broke off negotiations on the assistant diesel firemen demand. By December 3, 1949, the firemen's organization was circulating a strike ballot among its members, regarding the assistant diesel firemen issue. It was just as if Emergency Board Seventy had never met. As pointed out in Chapter III, this is what has made the diesel dispute so unique and frustrating. Formal agreements and official investigating board recommendations made in the controversy, seemed to be respected only by those parties the agreements or recommendations favored. With such a condition governing the progress of the diesel dispute, it was not surprising that the controversy entered the 1950's, further from settlement than ever.

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61 Ibid., p. 330.
62 Ibid.
The Diesel Dispute Enters the 1950's

In May of 1950, the firemen's organization called a strike on selected railroads in various parts of the nation to "compel" acceptance of its assistant firemen demand.\(^1\) The strike was relatively unsuccessful, due in great part to the lack of cooperation of the Brotherhood of Locomotive Engineers. The engineers' union told its members that the primary purpose of the strike was to require the railroads to use firemen for work "rightfully" belonging to assistant engineers.\(^2\) Thus the engineers crossed the picket lines of the firemen, and operated the trains without firemen.\(^3\) It might be added, the diesel-powered trains successfully were operated without firemen aboard. The operation of these trains without firemen established a dangerous precedent that

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\(^1\) *Award of Arbitration Board, Case A-3391-ARB, 140*, appointed by the National Mediation Board, April 13, 1954, p. 8.


\(^3\) *Ibid.*
would hurt the Brotherhood of Locomotive Firemen's case in the diesel dispute. The entire world seemed to be crashing in on the firemen. Their position since the victory in the 1937 Firemen's Agreement had become increasingly precarious. It was very clear to the firemen's organization that the major fight for survival of the union and craft was immediately at hand.

The strike of the firemen lasted from May 10 to May 16, 1950. The manner in which this strike ended was as complicated as any other aspect of the diesel controversy. The strike actually was ended by a mediation agreement dated May 17, 1950. However, an intrinsic part of this mediation agreement was an agreement to submit certain unsettled issues involving the watching rule and en route diesel maintenance to an arbitration board. The resultant arbitration board and its findings are discussed later in this chapter.

The 1950 Firemen's National Diesel Agreement

The basic mediation agreement which ended the 1950 firemen's strike was known as the 1950 Firemen's National Diesel Agreement. In regard to diesel crew requirements, this agreement did not differ materially from the various regional diesel agreements executed in 1943 and early 1944. The most significant change in the 1950 Agreement concerned an amendment to the requirement for yard diesel firemen. The


1943 regional agreements had stated that a fireman would not be required on internal combustion (diesel) or electric yard engines of less than 90,000 pounds weight on drivers.\(^6\) Such motive power units were not to be considered as locomotives for firemen assignment purposes.\(^7\) Although the 1950 Firemen's Agreement contained a similar provision on yard engines, an amendment was added to the basic statement.\(^8\) The amendment declared that internal combustion or electric yard engines of less than 90,000 pounds weight on drivers, installed subsequent to June 1, 1950, would be considered as locomotives, and thus require a fireman.\(^9\) This amendment could not be considered a major victory for the firemen, as new diesel and electric yard engines generally were getting heavier, not lighter in weight. Therefore, few units of motive power would be subject to the amendment.

The most unusual feature of the 1950 Firemen's National Diesel Agreement was that section which submitted the unresolved watching rule, and en route diesel maintenance issues to arbitration. The agreement-to-arbitrate clause stated that the arbitration board should begin its hearings in September or October of 1950.\(^10\) However, this date was postponed by the parties involved until October 27, 1953; the board

\(^6\) Memorandum of Agreement, by Eastern Carriers' Conference Committee and Brotherhood of Locomotive Firemen and Enginemen, August 13, 1943, p. 2.

\(^7\) Ibid.

\(^8\) Mediation Agreement—Basic Mediation Agreement, Case A-3391, National Mediation Board, May 17, 1950, p. 3.

\(^9\) Ibid.

\(^10\) Arbitration Board, Case A-2291-ARB. 140, p. 8.
was given until April 15, 1954, to make its award in the case. The actual award of the arbitration board was dated April 13, 1954.

The 1954 Diesel Arbitration Board

The firemen had been displeased for some time with the manner in which the railroads carried out the watching rule. In its testimony to Emergency Board Seventy in 1949, the Brotherhood of Locomotive Firemen claimed the railroads actually were violating the watching rule provisions, as established by the regional agreements of 1943 and 1944. The union stated, in this regard, that the carriers were permitting firemen to leave the control cabs of watching rule trains, while the trains were in motion. During the 1949 Board hearings, the Brotherhood also had asserted diesel maintainers (diesel technicians) were performing engine room work "rightfully" belonging to firemen. It was the negative recommendations by Board Seventy on these claims that primarily precipitated the 1950 strike by the firemen. These issues were contested so bitterly, the carriers and firemen could not resolve them during the negotiations leading to the 1950 Firemen's National Diesel Agreement.

In order to avert another labor crisis, the firemen and railroads consented, as an inherent formal part of the 1950 agreement, to submit the watching rule and diesel maintainer problems to binding arbitration.

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11 Ibid., pp. 2 and 9.
12 Transcript of Proceedings of the Presidential Railroad Commission, p. 34.
13 Ibid.
On October 27, 1953, Arbitration Board 140 commenced its hearings on these issues. It took until April 13, 1954, for the Board of Arbitration to arrive at its findings. There was such a concentration on trivia in the early phases of hearings, it appeared the Board might never be able to consider the real problem issues involved.

Although the Arbitration Board clearly had been established by the 1950 Firemen's Agreement to consider the watching rule and diesel maintainer problems, the railroads and firemen were in dispute as to what aspects of these issues should be open to arbitration. Thus the Board first had to decide what it was to arbitrate, and exactly what arbitration jurisdiction it had. The entire affair was following the diesel dispute's characteristic pattern of confusion. Without the rationality Board Seventy had injected into the dispute in 1949, the entire diesel problem might have been hopelessly out of control by the time of the 1954 Arbitration Board's hearings. In addition to the problem concerning what actually was to be arbitrated, the Board hearings were harassed by a constant play on words by the railroads, by the Brotherhood of Locomotive Firemen, and by the Board itself. However, the play on words by the parties involved was not surprising, since the arbitration hearings concerned interpretation of the often nebulous provisions of existing railway labor agreements.

In their opening argument to the Board, the firemen contended there was no dispute between the carriers and labor over the classification of trains subject to the watching rule. The Brotherhood of Locomotive Firemen, Case A-3991-ARB, pp. 11, 20.
Locomotive Firemen further claimed the only questions the Board should consider were, whether the carriers were violating regional diesel agreement provisions governing engine crew procedures on watching rule trains, and provisions governing the use of diesel maintainers for en route maintenance. The firemen's organization did not want the watching rule, as such, to be considered by the Arbitration Board. In fact, the firemen sought to eliminate from Board investigation and interpretation, any agreement provision or practice favorable to their cause. Conversely, the firemen hoped to gain Board consideration only of agreement provisions and practices unfavorable to their interests.

The carriers countered the tactics of the firemen by claiming that, by the "express wording" of the agreement to arbitrate (in the 1950 Firemen's Agreement), the total watching rule issue was subject to the interpretation of the Arbitration Board. The following excerpts from the report of the Arbitration Board illustrate the problem the Board had in defining its position in this matter:

The injunction that the Board shall confine itself strictly to the decision of matters specifically submitted to it, is not subject to construction and means exactly what it says. To exceed such restrictions upon the authority of the Board would only invite judicial review of the validity of our findings. We think, also, that it is mandatory upon the Board to decide every question referred to it and that a failure to so do could likewise invalidate the whole award ... . It is evident from the foregoing that this Board must decide all questions before it and yet not exceed its authority, if its award is not to be subjected to judicial disapproval ... . If, as the organization contends, the only question to be decided was whether the carriers were violating the specified sections of the

15 Ibid.
16 Ibid., p. 11.
regional diesel agreements, it could have been simply and concisely stated that such was the only issue. To adopt the theory of the organization would require us to disregard much of the language employed in stating the question to be arbitrated. . . . It was clearly intended that in addition to determining whether the carriers had or were violating the regional agreements, these provisions were to be interpreted in order that there could be a uniform meaning attached to them for the mutual benefit of the railroads and the firemen. If this were not so, such provisions as "for the purpose of obtaining a more definite determination of the rights and obligations of the parties" and the award "shall continue in force as an interpretation of the provisions of the agreements" would have been wholly unnecessary and could have been left out of the arbitration agreement. Under such circumstances, the very fact that they were included constitutes a conclusive intent that they should be given some meaning. The only reasonable meaning that could be given to them is that the specified provisions of the regional diesel agreements contemplated that these sections be made more plain and definite by interpretation. . . . Under the circumstances, we are forced to the conclusion that the interpretation of the meaning of the watching rule is before this Board, and that such interpretation is necessary to the making of any award that conforms to the requirements of laws as set forth in the Railway Labor Act. To come to any other conclusion would only be to risk judicial disapproval and the consequent invalidation of the whole proceeding.17

In short, the Board ruled against the firemen's claim that the watching rule, as such, was not open to interpretation in the arbitration hearings. This action by the Board opened the total watching rule provision for re-examination. The Brotherhood of Locomotive Firemen had suffered its first defeat at the hands of Arbitration Board 140; there would be others. The previous quote from the report of the 1954 Arbitration Board is presented in order to show the complexity of the issues involved in the arbitration hearings. Since these hearings would lead to a binding arbitration award, the Board was attempting to leave

17Ibid., pp. 12-14.
no legal loophole in its findings. Any unsubstantiated or invalid statement by the Board could cause legal nullification of the arbitration award. A court rejection of the award would reopen the disputed issues, and possibly result in a national railway strike. Since the issues to be considered by the Board, even with the broadest interpretation, only covered a part of the diesel labor problem, there was never any hope of the Board's award eliminating the total diesel dispute.

The Re-examination of the Watching Rule

The major fear of the firemen after the Board had opened the watching rule for re-examination, was the possibility of the entire provision being discarded in the final arbitration award. The Brotherhood of Locomotive Firemen thus girded to defend the validity of the watching rule in the remaining hearings of the Board. The union knew improved diesel locomotive technology, and doubt about exclusive rights of firemen to power production, would make defense of the watching rule and associated provisions more difficult than ever. This was primarily why the firemen's organization desired to confine the arbitration hearings to a consideration of carrier violation of the rule rather than to an interpretation of the rule itself.

In presenting its case to the Arbitration Board, the firemen's organization contended the watching rule applied to three classes of trains; these included high-speed passenger trains, streamlined passenger trains, and main-line through passenger trains. The railroads, however, claimed the rule applied only to two classes of trains, including

18 Ibid., pp. 18-19.
high-speed streamlined through passenger trains and high-speed main-line through passenger trains making few or no stops.\(^19\)

The watching rule provision of the regional agreements which was under examination, stated:

> On multiple-unit diesel-electric locomotives on high-speed, streamlined, or main-line through passenger trains, a fireman shall be in the cab at all times when the train is in motion.\(^20\)

The firemen claimed the use of the comma and the word "or," rather than the word "and" between the words "streamlined" and "main-line," indicated an intention in the regional agreements to establish three classes of trains. The effect of the firemen's claim would have been to make virtually every multiple-unit diesel-powered passenger train subject to the watching rule, and its firemen assignment requirements. The only passenger trains not covered by such an interpretation of the rule would have been those powered by single-unit diesels, or low-speed, unstreamlined, local-service multiple-unit diesel-powered trains. The Arbitration Board ruled against the firemen on this matter; stating that there was no evidence to indicate the provision referred to more than two classes of trains.\(^21\) The firemen had lost another round in their fight to preserve firemen positions in the diesel era.

The Board stated that the high-speed capability of the diesel locomotive was what made the watching rule necessary.\(^22\) Subsequently,

\(^{19}\)Ibid., p. 19.


\(^{21}\)Arbitration Board, Case A-3391-ARB, 140, p. 19.

\(^{22}\)Ibid., p. 20.
the Board indicated sixty miles per hour should be the dividing line between low and high speeds in railroad operations.\footnote{Tbid., pp. 20-21.} Thus a train which maintained an average speed of sixty miles per hour between any two stops would be considered in high-speed service. The mere attainment of sixty miles per hour at some time in its run would not place the train necessarily in the high-speed category. It is surprising that after indicating high-speed was a key factor in the watching rule, the Board did not attempt to make a comparative analysis of the speeds of steam and diesel-powered trains.

For some unexplained reason, steam locomotive speed capabilities generally have been ignored in the various formal hearings and investigations associated with the diesel crew dispute. From the standpoint of the firemen, this indeed has been a fortunate omission. There were late model steam locomotives that easily could reach and maintain the speed levels of the fastest diesel motive power units. Several veteran railroad employees commented to the author that, in a number of cases, particularly of passenger service, trains with diesel power had significantly slower schedules than the same trains previously had with steam power.

It must be recognized that in steam service, the fireman usually was so busy "firing" the engine, he had little or no time for lookout duties. Nevertheless, the firemen's organization did not ask for the assignment of extra firemen to high-speed steam locomotives for constant observation of signals and right-of-way. The Brotherhood of Locomotive
Firemen had waited until the diesel conversion to demand the assignment of assistant firemen to the cabs of high-speed locomotives, to ensure that one fireman always would be available for lookout duties. What made this situation so ironic was, that on diesel locomotives (especially late model diesel power), the basic fireman was relatively free to perform constant lookout duties. In addition, as pointed out above, there were a number of steam-powered trains that had faster schedules than their diesel-powered counterparts. Fortunately for the firemen, neither the carriers, nor the investigative boards ever really pursued this point.

In connection with an analysis of the Arbitration Board hearings on the watching rule, it is important to recognize the firemen's interest in the rule was motivated by a desire to preserve firemen employment in the diesel era; safety considerations apparently constituted a facade which the firemen used to cover the real reason for their promotion of this rule. The previous discussion on steam locomotive speed capabilities should make this point quite evident. It was the contention of the firemen's union that on high-speed passenger trains, for safety purposes, a fireman should be in the cab at all times to perform lookout duties. The firemen's organization felt that if a fireman was required in the cab at all times, any engine room work would dictate the assignment of an additional fireman to the diesel locomotive crew. When the Brotherhood of Locomotive Firemen originally demanded the watching rule in the early 1940's, there were some en route engine room maintenance duties on diesel locomotives.
By 1953, however, on route engine room maintenance virtually was absent, due to technological improvements in the diesel. In addition, the hood-type diesel which precluded on route engine maintenance, was making its appearance. Thus even if the watching rule did remain in effect, there would be little reason to expect it would cause additional firemen to be assigned to diesel locomotives. Undoubtedly, the firemen's organization realized this fact. However, the union probably felt, just as it did earlier, that at least the watching rule requirement would help protect the job of the basic diesel fireman. Therefore, the union position on the watching rule was as vehement as ever in the hearings before the Arbitration Board.

Since the word "streamlined" was mentioned in the watching rule provisions of the regional diesel agreements of the early Forties, and since the arbitration hearings had become language oriented, considerable time was spent by the Arbitration Board analyzing the meaning of streamlined. The carriers argued that a streamlined train consisted of a modern streamlined locomotive and matching lightweight cars exclusively. The firemen's organization claimed a streamlined train was one which predominantly consisted of lightweight cars.

The firemen, as usual, were seeking to place the broadest possible interpretation upon a labor agreement provision. According to the firemen's definition, a predominantly lightweight streamlined train could have some standard heavyweight cars in its consist, and still be

24 Ibid., p. 21.

25 Ibid.
considered a streamliner. The argument of the firemen on this point was
that if the carriers' definition was used, a few standard heavyweight
cars might be put on the train, just to keep it from being considered
streamlined and subject to the watching rule. It was, in fact, not
uncommon to see some standard cars in lightweight streamlined passenger
train service; this usually was due to shortages of the lightweight cars.
On this issue, the Arbitration Board took a position somewhat in between
the arguments of labor and management. The Board stated that the fol­
lowing criteria would be used for the purpose of classifying a train as
streamlined: 26

a. The train must be powered by a multiple-unit diesel
   locomotive.

b. The train must consist of cars generally used in
   passenger service.

c. The train must consist of lightweight matching cars.

d. The train must be capable of sustained high speeds.

The Board further stated that the manner in which the train was adver­
tised would be a significant factor in identifying streamlined trains.
Of particular importance to the firemen, was the Board's comment that
the temporary emergency use of conventional heavyweight cars would not
change a streamlined train's classification.

The statement by the Arbitration Board that a streamlined train
must be powered by a multiple-unit diesel locomotive, has some inter­
esting implications. There were, and still are, high-speed streamliners
powered by single-unit diesel locomotives. However, for purposes of

26Ibid., p. 22.
application of the watching rule, such trains would not be considered as streamlined trains. Although the firemen did not like the multiple-unit diesel criteria for streamlined trains, the fact that it was stated could be traced to their own earlier efforts to preserve diesel firemen positions. In the early 1940's, the firemen sought to stop multiple-unit diesel job-cutting by demanding the implementation of the watching rule; thus the rule and multiple-unit diesels became associated. The firemen felt the application of the watching rule would result in the assignment of assistant firemen to multi-unit diesel locomotives. From that point on, only multiple-unit diesels were considered in statements of the watching rule. This tradition also was followed by Arbitration Board 140. Since the watching rule was applicable to high-speed passenger trains, and since such trains were often streamlined, it followed that the Arbitration Board identified streamlined trains according to the provisions of the watching rule. This was typical of the circular reasoning that often characterized the diesel dispute. In this case, the firemen actually were hurt by the boomerang effect of their own argument.

The terminology "main-line through passenger train" as stated in the watching rule, also received considerable attention in the arbitration hearings. The Brotherhood of Locomotive Firemen claimed the definition of main-line trains in the watching rule exempted only local trains from subjection to the rule. This was simply an attempt by the firemen to place all multiple-unit diesel-powered through service passenger trains under the provisions of the rule. If the Board had

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27Ibid., p. 23.
agreed with this contention of the firemen's organization, the union probably would have attempted next to place ever "Locals" under a designation of main-line through service, on the basis of their frequent use of main-line trackage. However, the firemen were cut quite short by the Board on this issue. The Arbitration Board very clearly stated that the watching rule applied only to main-line high-speed through passenger trains making few or no stops, and not to main-line through passenger trains making numerous stops. 28

The Board admitted the line of demarcation between few and numerous stops was ambiguous. However, no attempt was made to state an exact number of stops as a dividing line for main-line trains subject to the watching rule. This was the kind of thing that kept the diesel dispute alive. The Board certainly must have realized that not stating a definite number of station stops on this issue, would provide the firemen with an opportunity to challenge the Board's definition of trains subject to the watching rule. In defense of the Board's action on this matter, a large number of highly variable factors would have to be reckoned with in setting a station stop figure appropriate for all American passenger trains.

Firemen Rights in Diesel Engine Rooms

The firemen's organization had been claiming for some time that the carriers were allowing personnel other than firemen (supervisors, instructors, diesel maintainers, electricians, machinists, and inspectors) to perform diesel engine room work. The firemen alleged such

28 Ibid.
practices violated the traditional exclusive rights of firemen to the production of locomotive power, including en route engine maintenance. The railroads counter-claimed the firemen had no such exclusive rights to engine room work, either by virtue of tradition or agreement. The railroads and the Brotherhood of Locomotive Firemen, being unable to resolve this issue in the 1950 negotiations, agreed to submit the problem to the 1954 Arbitration Board.

The diesel engine room firemen rights issue arose principally from the wording of the watching rule which stated in 1943 regional agreements:

On multiple-unit diesel-electric locomotives in high-speed, streamlined, or main-line through passenger trains, a fireman shall be in the cab at all times when the train is in motion. If compliance with the foregoing requires the service of an additional fireman on such trains to perform the work customarily done by firemen, he shall be taken from the seniority ranks of the firemen, . . . . For the sole purpose of designating the ranks from which the employee shall be drawn and for no other purpose, it is further understood that on multiple-unit diesel-electric locomotives operated in other classes of service, should there be added a man to perform the work customarily performed by firemen such man shall also be taken from the seniority ranks of the firemen . . . .

The interpretation of the word customarily as it was used in the watching rule provision became the focal point of the arbitration hearings on this issue.

The firemen's organization contended the watching rule clearly required that firemen, to the exclusion of any other class of employee, perform all operational engine room work of the kind customarily

performed by firemen.\textsuperscript{30} In turn, the Brotherhood of Locomotive Firemen
claimed all operational or en route engine room work customarily was
performed by firemen.\textsuperscript{31} The firemen were following their standard
procedure of interpreting an agreement provision quite broadly. The
firemen's union summarized its position on the matter by stating that
the traditional duties of firemen consisted of all work "on or about" a
locomotive involving the production of power.\textsuperscript{32} The only thing clear
in regard to this issue was that the Arbitration Board had another word
battle on its hands.

In the arbitration hearings, witnesses for the firemen's organi-
ization made such statements as the following:

- Firemen are entitled to perform all the work on a diesel
  locomotive that they are capable of performing ....
- that firemen are entitled to perform all the routine
  operating duties on diesel locomotives ....
- that firemen are entitled to perform all work en route other
  than heavy and complicated repair work ....
- that firemen have the exclusive right to perform all work
  that has been assigned to them by operating rules,
  bulletins and instructions, etc.\textsuperscript{33}

After listening to such testimony, the Arbitration Board stated: "they
(firemen) assert exclusive rights to all work for which they are held
responsible for faithful performance."\textsuperscript{34} This statement by the Board
was just about as meaningless as the preceding statements by the firemen.

\textsuperscript{31} Ibid.
\textsuperscript{32} Ibid., p. 27.
\textsuperscript{33} Ibid.
\textsuperscript{34} Ibid.
It appears the firemen were attempting to ensure that, other than one operating engineer, only firemen of some description would serve in diesel locomotive crews. Not only were the firemen attempting to dictate the composition of diesel crews, but they also were seeking to keep supervisors, assistant engineers, and maintenance specialists from performing any diesel locomotive operating functions.

The arguments of the railroads on this issue were just as confusing and vague as those of the firemen. According to the report of the Arbitration Board the carriers argued as follows:

They (railroads) allege that the words "work customarily performed by firemen" constitute the job, position, or assignment usually performed by firemen; that it identifies the job and the duties that usually and customarily go with it. They deny that tradition, custom or practice, or any rule in any agreement gives the firemen the exclusive right to perform every part of the work that firemen habitually and ordinarily perform. They assert that a fireman is obligated to do all that he is qualified to do to get the train over the road, - that engine crews work as a team with no well defined division of exclusive duties . . . .

Both the firemen and the railroads were trying to win their case by a barrage of word structures that confused and evaded the major problem. After listening to the bewildering arguments of labor and management on firemen rights in locomotive operation, the Board recognized that a descriptive definition of firemen duties, past and present, was imperative. Such a specific statement of firemen duties would shed some light on the question of traditional firemen work. Thus the Arbitration Board proceeded to analyze and describe steam engine firemen duties stating: "Traditional work, if any exists which the firemen might

35 Ibid.
claim to be exclusive, necessarily must derive its origin from the steam locomotive.  

The Board then took the position that during the steam era the firemen made no claim of exclusive rights in locomotive operation. Since engineers and firemen frequently assisted each other in operating and fueling steam engines, it would have been difficult to establish a clear cut line of demarcation between the two crafts. The report of the Arbitration Board implied that the firemen decided to press for exclusive rights on diesel locomotives, under efficiency and safety guises, only for the purpose of maintaining firemen employment. The unwillingness of the firemen's organization to list specific diesel firemen duties in early diesel labor agreements had boomeranged upon the union. An early statement of diesel firemen duties would have strengthened the firemen's claim to certain exclusive diesel engine room rights. Since no definitive statement of either steam or diesel engine firemen duties was available in existing labor agreements, the Arbitration Board had to rely upon hearing testimony and general experience to make its decision on the firemen exclusive rights issue. In this regard, the Board made the following comments in its final report:

The contention that the firemen had craft rights to all work necessary to the production of power is not a valid one. The term "production of power" was never employed in connection with the firemen's work on steam locomotives. It appears to have been coined after the coming of the diesel locomotive in an attempt to gain rights on the new type of power. The evidence shows, we think, the change

36 Ibid., p. 28.
37 Ibid., p. 29.
from steam to diesel power left little or nothing for the firemen to do. The attempt of the organization to make it appear that the duties of a fireman on the steam locomotive can be traced into the engine room of the diesel locomotive simply cannot be accepted as a logical analysis of the situation. The two types of power are not similar or analogous. The rights of the firemen on the diesel locomotive are contractual and not traditional.

This provision (the watching rule) means what it plainly says, but it does not mean that a fireman has the exclusive right to perform any and every duty in the engine room that a fireman has been assigned to perform. Such an interpretation would be uneconomical, require unnecessary assignments and interfere with the duty of all properly on the locomotive to use their best efforts to get the train over the road on schedule. There is little work to be performed in the engine rooms and it can ordinarily be performed en route or at station stops. That which cannot be so performed is the unusual. But, in any event, such work is not exclusively that of a fireman. It is only when a second man is needed to perform operational duties (actual operation of a locomotive in conjunction with the watching rule) on a diesel locomotive that a fireman from the firemen's seniority roster is entitled to be assigned.

Thus this Board had stated in a binding arbitration award what Emergency Board Seventy essentially had stated in its report of 1949.

The Arbitration Board, following the significant path established by Emergency Board Seventy, had clarified management-labor prerogatives in the diesel dispute. In this particular case, the Board had acknowledged the railroads had certain rights in the determination of the craft composition of diesel locomotive crews. In any event, the Board had made it clear that the firemen had no exclusive craft work rights in diesel engine rooms. The victory for the railroads and defeat for the firemen on this issue, in one way, were most insignificant. In another context, this judgment by the Arbitration Board was one of the most crucial and significant decisions ever made in the diesel dispute.

Ibid., pp. 30-32.
In regard to the actual use of locomotive crew personnel in diesel engine rooms, the ruling against the firemen was really quite unimportant. By 1954, diesel locomotives required very little, if any, engine room work. Therefore, it was most unlikely an extra crewman of any craft would be assigned by the railroads to diesels for en route engine room work. In addition, the hood-type diesel which precluded en route engine room work (it had no engine room) had made its appearance, and soon would dominate the diesel rosters of American railroads.

The important aspect of the Arbitration Board's ruling involved management and labor prerogatives in determining diesel locomotive crew composition. The Board's ruling against the firemen's claim of exclusive locomotive power production rights, would later aid the railroads in their efforts to remove firemen from freight and yard diesel crews. Even if en route diesel engine maintenance, or associated work occasionally was required, the railroads were now in a position to use locomotive crew personnel of any craft for such tasks. If the firemen had been successful in obtaining exclusive en route engine maintenance (power production) rights, the chance of even minor en route maintenance tasks occurring, would have dictated a fireman be assigned to all diesel locomotives.

In the final analysis, the Board's negative ruling on firemen exclusive power production rights, was most damaging to the security of basic diesel firemen positions. The firemen's organization probably did not realize this fact at the time. The Brotherhood's main concern with this issue had been to obtain extra firemen on diesel-powered trains, particularly on multi-unit diesel trains subject to the watching rule.
The diesel controversy had become so complex that each new phase or turn of events, would open many new critical avenues of action for both labor and management. Neither side could afford to be unprepared to cope with the potential eventualities of a new situation in the dispute. The future of a union, a craft, and the American Railroad System were at stake.

As expected, the Brotherhood of Locomotive Firemen challenged the validity of the Arbitration Board's findings. However, the challenge was not especially vigorous, and no dire strike threats came about as a direct result of the arbitration award. The firemen recognized that the problems created by the unfavorable recommendations of the various diesel dispute boards, were being compounded by daily technological improvements in diesel locomotives. There was a greater fear than ever among the firemen that the end result of this chain of events would be elimination of their union and their craft. However, the firemen's organization, for the moment, would sit relatively tight, nurse its wounds, and wait for the carriers to make the next big move in the diesel dispute.

Management Takes the Offensive

The firemen would not have to wait long for such a move by the railroads. By 1956, the railroads had made it known they would seek to eliminate firemen from diesel freight and yard engines, as soon as possible.\(^{39}\) As far as the firemen were concerned, no more drastic step could have been taken by the railroads in the diesel dispute. The

\(^{39}\) Transcript of Proceedings of the Presidential Railroad Commission, p. 811.
Brotherhood of Locomotive Firemen always had feared such action by the carriers would result from popularization of the diesel locomotive. It was clear to labor that if the railroads should succeed in eliminating diesel freight and yard firemen, both the firemen's craft and union likely would die. Craft and union survival in such a situation would have to depend upon passenger train operations. However, by 1955, a significant number of the nation's railroads, particularly those in the East, were seeking to reduce, or abandon their passenger operations. Competing modes of passenger transportation, plus the carriers desire to invest in more profitable freight equipment, were causing a constant elimination of passenger trains.

The railroads had fired their big cannon. There would be no more preliminary battles over assistant firemen and the like. The major war had begun. Although the firemen's organization had felt a move by the carriers to eliminate diesel firemen eventually would be made, the reality of the fact, in 1956, was overwhelming. The firemen had made every effort since the introduction of the diesel, to ensure that at least a basic fireman always would be employed on diesel locomotives. Until 1966, their efforts, in this regard, not only had been successful, but, in reality, had met little opposition. In fact, the only formidable opposition the Brotherhood of Locomotive Firemen ever had experienced on the basic diesel fireman issue, was in conjunction with the early streamliners, and the resultant 1937 Firemen's Agreement.

The series of defeats the firemen had been suffering in recent formal diesel negotiations and hearings made the situation even more
dire for them in 1956. As a result of these setbacks, the momentum of
the firemen's cause was downward; this condition was occurring at a time
when the firemen required their greatest strength in the diesel dispute.
Whereas the firemen's position had been on the decline, the railroad's
position, in 1956, was, perhaps, at its highest and strongest point in
the diesel crew dispute. The railroads' strength in the diesel dispute,
at this time, could be traced to two major factors.

First, the same series of defeats, climaxed by the 1954 Arbitra-
tion Award, that had weakened the firemen, conversely had strengthened
the carriers. Second, advances in design of the diesel locomotive and
the introduction of the hood-type engine-roomless diesel, served to
strengthen major arguments of the carriers regarding diesel crew com-
position. Locomotive technology, at this point, was definitely on the
side of the carriers.

With the impetus provided by such favorable conditions, the
carriers no longer needed to be passive in the diesel dispute; they now
could become aggressive and bargain with the firemen, or any other
operating craft, from a position of relative strength. Undoubtedly,
this is why the railroads began their campaign to eliminate diesel
freight and yard firemen in the middle 1950's. The firemen, perplexed
by their recent defeats in the diesel dispute, and now in addition,
facing the severest of all management challenges in the dispute, quickly
had to rally to the situation. The immediate task of the firemen's
organization was obvious. No time could be wasted in preparing to
defend the basic diesel fireman position in all types of railroad
service. The firemen could not be sure if, and when, railroad
management arbitrarily might decide to implement its announced desire to remove firemen from freight and yard diesels. The firemen wondered whether such contemplated carrier action would be an issue for negotiations, or whether, under the findings of Emergency Board Seventy and Arbitration Board 140, the railroads might assume the unilateral right to remove diesel freight and yard firemen as they pleased.

The Brotherhood of Locomotive Firemen apparently believed the precedents for diesel firemen established by early diesel agreements, would be strong enough to offset any unilateral action by the railroads in this matter. The firemen thus prepared for a strong formal defense of all basic diesel firemen positions. It was clear to the firemen's organization that this defense would have to be made in formal negotiations with the railroads, and in the inevitable government-sponsored diesel hearings; these hearings had become an accepted, intrinsic feature of the diesel dispute. Unilateral action by the railroads to remove firemen from diesel locomotives, would not be tolerated, in any case, by the firemen. The firemen were prepared to strike, if necessary, to gain the opportunity to defend diesel firemen positions through negotiations at the bargaining table.

In order to strengthen their national bargaining position on the diesel firemen issue, and to ensure an emergency back-up defense in the event negotiations with the railroads failed, the firemen, in 1956, renewed their efforts to obtain additional state full-crew legislation. The firemen were not very successful in this endeavor, as only two additional states, California and Wisconsin, were induced to establish
full-crew laws. Both of these states enacted their full-crew legislation in 1959.

In publicizing their intention to remove diesel firemen from freight and yard service, the railroads made it clear they had no intention of removing firemen from diesel passenger locomotives. It should be remembered that since head-end brakemen have not been assigned to passenger locomotives, only an engineer and fireman normally have comprised a passenger engine crew. Although the railroads probably would have liked to eliminate passenger diesel firemen, they chose not to take such action for two major reasons.

First, the watching rule provision made it necessary to have two men in the locomotive cab on passenger trains subject to the rule. The carriers did not care to tamper with this well entrenched "safety" rule. Labor would be quick to point out that a carrier demand for elimination of the watching rule showed management's utter disregard for train operational safety. This only would imperil the railroads' chances of eliminating diesel freight and yard firemen. Second, watching rule or not, American public opinion just would not allow a passenger train to operate with a one man locomotive crew. Traditional safety considerations in American railway passenger service demanded at least a two man locomotive crew. The railroads did not dare risk turning the American Public against them over this issue. The carriers also recognized that due to the declining number of passenger trains, the entire matter of passenger diesel firemen was just not worth worrying about at the time. There were more important issues, with much higher stakes to be reckoned with, at this point in the diesel dispute.
The railroads became more and more vociferous in their threats to remove firemen from diesel freight and yard engines. The firemen's union, with everything to lose if the carriers took such action, was equally vehement in threatening to strike over the issue. A number of other controversial issues also were harassing railroad labor relations by the late 1950's. These issues principally involved train crew composition, maintenance and miscellaneous right-of-way equipment crew requirements, wage schedules and maximum work day hours of operating crew personnel, division point changes of engine and train crews, and road and yard crew jurisdictional work rights. The diesel locomotive had influenced some of these disputed issues, but not necessarily to the degree often expressed.

By 1960, as a result of the previously mentioned controversial issues, railroad labor relations had deteriorated to an all time low. The nation was again on the verge of a national railroad strike. The situation was grave as railroad labor relations followed its customary pattern of turmoil. In order to investigate and evaluate the claims of both sides, and, thereby, avert a disastrous national rail tie-up, President Dwight D. Eisenhower, on November 1, 1960 (Presidential Executive Order No. 10891), established the Presidential Railroad Commission.

The Presidential Railroad Commission

Only that phase of the Commission investigation concerning diesel firemen is examined in detail in this study. However, this was, by far, the most significant aspect of the Presidential Commission's hearings.
Whereas the other issues to be considered by the Commission, obviously, had to be resolved eventually, the diesel firemen problem required immediate solution. The diesel firemen issue primarily was at the root of the current rail strike threat. If this issue could be settled quickly, a strike probably would be averted. Cooler heads, with less pressure upon them, then would have an opportunity to work out the other contemporary problems of railroad labor relations.

The Presidential Railroad Commission investigation differed from previous diesel dispute board hearings in two major respects. First, both labor and management presented their strongest and most detailed cases of the diesel dispute to the Commission. Management felt it could wait no longer to realize the full potential efficiency of dieselized operations. Competition from other modes of transportation had become more formidable than ever. On the other hand, the firemen were quite aware that the life of their craft and union was immediately at stake. This was no longer a future possibility, it was near reality for the firemen.

Second, by 1960, the diesel locomotive had reached an advanced stage of development. The hood-type of diesel already was prevalent in railroad operations. In fact, it rapidly was displacing Covered Wagons. Even the Covered Wagons, with their enclosed diesel engine rooms, had reached a state of development, wherein en route maintenance was unnecessary. Railroads, in a number of cases, actually were prohibiting engine crews from performing any en route engine maintenance. Due to this advanced state of the diesel locomotive, arguments were presented to the Commission that had never been heard before in the diesel dispute.
However, on many points of the diesel firemen issue, the ideas expressed were similar to those brought out in earlier hearings.

In presenting their argument to the Commission to justify the elimination of diesel freight and yard firemen, the carriers attempted to show there simply was no work for such a crew position to perform; hence, there was absolutely no need for such a "non-existent" position to be filled. The railroads' philosophy on this issue was that they were fighting some very efficient competing modes of transportation, and not fighting the potential unemployment problem of an obsolete craft. In other words, the railroads believed they should not be held responsible for maintaining firemen employment, when they were facing severe threats to their financial solvency and private ownership. The carriers stated, in testimony to the Commission, that wages and related benefits provided to unnecessary diesel freight and yard firemen, amounted to more than $250,000,000 annually. 40

The strategy of the Brotherhood of Locomotive Firemen, in presenting its case to the Commission, was aimed at showing firemen were needed in all types of diesel service. In attempting to prove this claim, the firemen's organization made use of the acknowledged capabilities of modern diesel locomotives. Thus the firemen contended the full efficiency potential of the diesel mechanism could not be exploited without a fireman aboard to observe and service the engine; they further claimed the high-speed capability of the diesel dictated firemen be

40 Ibid., p. 28.
aboard for safety purposes. These were old arguments, but they were presented by the firemen with new twists.

The firemen, in effect, were attempting to show that modern diesel locomotives, more than ever, required the services of firemen. They were attempting to turn a fact apparently negative to their cause (advanced diesel development), into a highly favorable consideration. It was about the only way they could handle the problem, under the circumstances. However, as this analysis will show, these arguments, regardless of their new twists and angles, were weaker than ever. Highly developed diesel technology would prove to be an insurmountable barrier to the firemen's cause.

The Commission Considers the En Route Maintenance Issue

Even though the carriers had not expressed any intention of eliminating diesel passenger firemen, the Brotherhood of Locomotive Firemen chose to defend firemen maintenance responsibilities on all types of diesels. The firemen's organization apparently believed they could present a stronger case by showing firemen had a maintenance role, regardless of the service in which a diesel was used. The union reasoned a diesel was a diesel, no matter what kind of train it powered. In addition, the firemen's union was taking no chance that the carriers suddenly might voice an interest in removing passenger diesel firemen.

The firemen's argument on diesel maintenance was twofold in approach. First, the firemen would attempt to convince the Commission that diesel locomotives still required en route maintenance service. Then they would try to prove to the Commission that firemen should carry
out such maintenance. Regarding the latter point, the firemen acted in their presentation as if the 1952 Arbitration Board had not ruled against their exclusive engine room rights claim. The diesel dispute rarely has known any of the customary bounds of labor relations. Binding arbitration, court injunctions and decisions, emergency board recommendations, and negotiated agreements only controlled the situation for the immediate period. With the passage of a short period of time, either one, or both sides, purposefully appeared to have ignored any previous formal decisions on the issues involved; this, of course, was only true of those issues which had been decided in a manner unfavorable to that particular side.

The firemen's union intended to show the Commission that en route diesel maintenance was necessary, even on the most modern diesels. However, the firemen had a back-up point in this regard, in case the carriers could prove such en route diesel maintenance was not required. The Brotherhood of Locomotive Firemen contended it was almost a certainty that some sort of diesel mechanical malfunction would occur en route. If a fireman was not aboard, the union asserted, just one mechanical malfunction would cause the train to be stopped, while the engineer performed the necessary maintenance. A spokesman for the firemen's organization, accordingly, stated:

I don't think the American people are going to stand for a system of railroading which would have as an essential element that everytime something goes wrong with one of the engines that the train be stopped out in the country some place while the engineer abandons

\[^{41}\text{Ibid.}, \text{p. 282.}\]
his place in the cab and goes back by himself to tinker with the engine in order to get the train started over the road again.\footnote{Ibid., p. 283.}

The firemen also made it clear that they felt the presence of a head-end brakeman in the diesel crew neither would alter nor relieve the situation. The firemen justified this idea with their standard argument that head-end brakemen were not qualified to perform maintenance work. The firemen's organization, ignoring the 1954 Arbitration Board's findings, also claimed that mechanical work en route rightfully belonged only to firemen. The argument of the firemen's union concerning train repair stoppages if a fireman was not aboard, was a subtle way of renewing its demand for assistant firemen on diesel-powered watching rule passenger trains. Watching rule trains required the fireman and engineer to be in the cab whenever the train was in motion. Thus in order to avoid stoppages of these trains for en route maintenance, repairs would have to be performed by a third party (assistant fireman). Since passenger trains were subject to the watching rule primarily because of their high-speed schedules, the firemen contended stopping such trains for en route maintenance was unthinkable.

During the Commission hearings, a new and rather far fetched idea was introduced by the firemen's organization, regarding engineers performing en route diesel engine room tasks. A witness for the firemen stated that if, at night or in bad weather, the engineer was required to leave the darkened control cab and enter the lighted diesel engine room to make repairs, he would have trouble reorienting his sight upon
returning to the locomotive controls.\textsuperscript{43} Therefore, it was possible the engineer might misinterpret signals, or fail to see right-of-way obstructions, until his vision returned to normal. It was clear from such testimony that the Brotherhood of Locomotive Firemen would leave no stone unturned in its defense of diesel firemen positions.

Aided by advanced diesel locomotive technology and the findings of Emergency Board Seventy and the 1954 Arbitration Board, the railroads were able to present a strong refutation of the firemen's arguments on diesel maintenance. The railroads argued that due to technological advances in diesel locomotive design, en route maintenance was no longer necessary. Even if a rare diesel mechanical breakdown occurred between stations, the design of the engine allowed the inoperable section of the mechanism to be shut down and isolated. The train then could proceed at reduced power until it reached a terminal, where diesel mechanics and electricians were available.

The railroads contended throughout the Commission hearings that the members of diesel locomotive operating crews lacked the necessary training and experience to perform en route diesel maintenance. In this regard, the following statement was made by a railroad witness:

\begin{quote}
Firemen receive no training in the repair or maintenance of the diesel locomotive and its appurtenances; it is not the duty of firemen to maintain and repair locomotives (this is the work of the maintenance of equipment forces employed in the locomotive shops); on many railroads firemen are not issued any tools, supplies or spare parts for maintaining or repairing locomotives; and on most locomotives firemen never have any occasion to do maintenance or make repairs . . . . The fact is that the diesel brought to the railroad industry a malady almost unheard of in the days of the steam
\end{quote}

\textsuperscript{43}\textit{Ibid.}
locomotive - a malady known in some sections as "tinkeritis." For some people the urge to adjust, tune up, fix, explore and improve a mechanized device seems almost irresistible. This is especially true of people with time on their hands, and the firemen have plenty of that. The temptation to tinker accounts for the fact that some railroads issue absolutely no tools, mechanical supplies for diesel or electric locomotives, and why many of them have posted instructions absolutely prohibiting tools to be taken aboard by anyone other than the qualified mechanical electrician. Some actually padlock the engine compartments and electrical cabinets and no one aboard the train is permitted to enter them. I am sorry to say that some firemen and head-brakemen who are only trying to help have ended up injured for attempting to make an adjustment or repair that he was neither trained, qualified, equipped nor expected to make.44

Since the general purpose Geep hood-type diesel locomotive was in common use by the 1960's, it received considerable attention in the Commission hearings. This type of locomotive, due to its lack of an enclosed engine room, greatly aided the carriers' refutation of union arguments built on en route maintenance. The following statements to the Commission by railroad witnesses illustrate this point:

... Returning to the diesel engine (in reference to the hood-type diesel), you can clearly see it is closed, a sealed piece of machinery, to be opened and handled by qualified mechanical force personnel. The ordinary fireman has neither the training, experience, nor knowledge to open the diesel engine and attempt to make running repairs.45

The general purpose hooded type locomotives are so designed that it is not practical and in some cases not possible for crew members to conduct inspection or to gain access to the diesel operating mechanism while the locomotive is in motion. Consequently these diesel units operate from station stop to station stop without the benefit of the routine inspections which the firemen may make on the car body types of locomotives. Our

44 Ibid., pp. 386-387.
experience with these general purpose locomotives indicates quite conclusively that the routine inspections which are made by firemen on the car body types while the locomotive is in motion are not necessary for safe and efficient operation.\textsuperscript{46}

The railroads used every opportunity during the Commission hearings to point out that hood-type diesel on route maintenance was impractical because of the open catwalk around the engine. Even if the Geep required on route maintenance, and the fireman was qualified to perform it, the train would have to be stopped to allow him to do the necessary work. No one could be expected to work upon a hood diesel's engine, while the train was in motion. It should be added that, by 1960, the great majority of diesel locomotives in production, and on the drawing boards were of the hood Geep type.

Another important diesel locomotive technological development greatly enhanced carrier arguments during the Commission hearings. This development involved a system of diesel locomotive cab alarms which a railroad witness described as follows:

Our diesel locomotives are so designed and constructed that if any difficulty or irregularity develops in an engine room, warning of the difficulty or irregularity is given in the control cab of the locomotive by the self protective light or bell (or by both). This warning is commonly referred to as an alarm.\textsuperscript{47}

The cab alarms generally eliminated the need for diesel engine room patrols by any crew member. If a malfunction of the engine occurred, it immediately would be noted by the engineer in the control cab via the alarm system. Some of these alarms required only that a fuse be changed,\textsuperscript{46,47}

\begin{flushright}
\textsuperscript{46}Ibid., p. 550. \\
\textsuperscript{47}Ibid., p. 551.
\end{flushright}
or a relay or circuit breaker switch be reset. This procedure was
described by a railroad official as "being comparable to flicking a
light switch." 48

If the alarm indicated a serious mechanical failure, the mal-
functioning engine unit could be shut off from the control cab, and the
train would proceed to the next terminal under reduced power. A railroad
official commented to the Commission on this situation as follows:

If the fault is as we sometimes say "firm," that is, of a
serious nature, the replacement of the blown fuse or
resetting of a circuit breaker will only result in the
new fuse blowing or the circuit breaker tripping out as
before. If the new fuse blows, indicating malfunction,
there is nothing the operating engine crew can do since
a serious type of electrical malfunction requires the
expert handling of an electrician or a mechanic with
electrical knowledge. In such an eventuality the
operating engine crew can only isolate the defective
unit and proceed to their destination at reduced power.
Two men, three men, four men, or five men - in fact,
regardless of the number (in the engine crew) - would
not change the situation . . . . The electrical com-
ponent parts of a diesel electric locomotive require
no more than one man in the cab of any such locomotive.
Where failures occur they will, first, either be of so
serious a nature that operating personnel should not
tamper with the locomotive, or second, they will be so
minor in nature that an adjustment can be made in fifteen
to thirty seconds. 49

The firemen's organization claimed the diesel alarm system would not
indicate all possible mechanical malfunctions, and that a trouble-shoot-
ing or inspecting fireman was, therefore, necessary. 50 The argument of
the union on this point was ineffective, as it was a recognized fact

48 Ibid., p. 452.
49 Ibid., pp. 452, 454.
50 Ibid., p. 274.
that the average fireman knew very little about the technical intracies
of the diesel. The in-line electro-mechanical alarm system was generally
far more efficient than the average fireman ever could hope to be in
detecting diesel engine malfunctions.

The case of the carriers on the en route diesel maintenance issue
never had been stronger. Even if some minor en route engine room mainte-
nance was required on freight Covered Wagon diesels, the head-end
brakeman could perform the task as well as any fireman. The 1954 Arbi-
tration Board had ruled that diesel engine room duties could be
performed by any crewman aboard. As far as passenger diesels were
concerned, the firemen would still be aboard to perform any en route
engine room inspections or repairs that were necessary. The railroads
had indicated they had no intention of seeking the removal of passenger
diesel firemen. If a watching rule passenger train required engine
room work by the fireman, the train would have to be stopped, however,
until the fireman returned to the cab. On older diesels, the carriers
could avoid such watching rule passenger train repair stops only by
having an additional engine crewman aboard. It was fairly certain
newer passenger diesels, especially those with the previously discussed
cab alarm systems, would not require the fireman to leave the control
cab for engine room work.

Technological advancement, more than cunning management, finally
had defeated the firemen on their en route diesel maintenance argument.
It would seem from their relatively limited argument to the Commission
on the diesel maintenance issue, that the firemen were well aware of
their rather hopeless position on the matter. The firemen apparently
chose to base their major effort to ensure the continued employment of firemen aboard all types of diesel locomotives on safety-lookout considerations.

The Commission Evaluates the Diesel Firemen Safety Role

Since the railroads only were interested in removing firemen from diesel freight and yard engines, the firemen's organization emphasized freight and yard service firemen safety roles in its presentation to the Commission. However, whenever the opportunity arose, the Brotherhood of Locomotive Firemen attempted to justify the passenger diesel fireman position on safety grounds. This, of course, meant the watching rule and related safety considerations of passenger service received some attention in the Commission hearings. At this point in the diesel dispute, the firemen recognized their task was neither to press for assistant diesel firemen, nor to become overly excited about unthreatened passenger diesel basic firemen positions. The immediate and most urgent objective confronting the firemen's organization was the preservation of basic firemen positions on freight and yard diesels. The major obstacle blocking the path of this objective of the firemen's union was the position of head-end brakeman. In earlier hearings, the head-end brakeman position primarily had hindered firemen efforts to place assistant firemen on multi-unit freight diesels.

By 1960, however, head-end brakemen seriously imperiled the continued existence of basic diesel freight and yard firemen positions. The carriers were claiming the presence of head-end brakemen in road freight and yard crews negated any need for diesel firemen. The
brakemen could perform any minor en route maintenance necessary, as well as assist the engineer in the lookout function. This would not, however, be a battle between the brakemen organizations and the Brotherhood of Locomotive Firemen. The strategy of the firemen's union was not to seek the elimination of freight or yard head-end brakemen in lieu of the firemen. The firemen intended to show that, particularly from a safety-efficiency point of view, both a head-end brakeman and fireman (three man engine crew) were necessary in diesel freight and yard service.

This position of the firemen would be weak right from the start, if for no other reason than the fact that high-speed passenger service operated with only a two man crew. In addition, the weak position of the firemen on en route diesel maintenance, would interplay with, and hurt their safety arguments. For example, if en route maintenance frequently had required the services of a crewman in the engine room, the firemen would have been in a strong position to claim a three man freight or yard crew was necessary for safety purposes. Under such circumstances, a third engine crewman would have been required to assist the engineer in lookout duties. However, since diesel technology virtually had eliminated en route engine room work, the carriers were able to argue that only a two man freight or yard crew was essential from any standpoint.

An interesting question involves why the railroads chose to eliminate diesel freight and yard firemen, rather than head-end brakemen. The elimination of either craft would have provided a two man engine crew, and, certainly, a fireman could have carried out the duties of a
head-end brakeman (switch throwing, coupling and uncoupling, right-of-way and train observation, etc.). Although the railroads have never made a public statement on this question, a four-part probable answer would not seem difficult to derive. First, the fact that a diesel had no fire to attend placed the fireman immediately on the "spot." Second, from a jurisdictional standpoint, and by tradition, switching, coupling, and the like always had been the jobs of railroad brakemen. Third, the firemen's organization had been a far greater thorn to the railroads in the diesel dispute than had any of the brakemen labor unions. Thus it appears the carriers deliberately were seeking to destroy the Brotherhood of Locomotive Firemen and Enginemen. Throughout the diesel dispute the firemen's union had been the railroads' prime antagonist. The firemen, themselves, seem to have been, at various times, incidental or extraneous to the dispute; in fact, they often appeared to be innocent victims of the whole affair. A fourth reason for the railroads' desire to eliminate diesel freight and yard firemen probably involved costly firemen wage schedules, work rules, and benefits.

Perhaps, the most surprising thing about the entire diesel dispute has been the failure of the firemen's organization and the brakemen unions to battle one another. The necessary ingredients for such an inter-union struggle definitely have been present. Such a fight never has materialized, however, likely because the unions concerned have had so many other fights on their hands, they dared not battle each other. The brakemen organizations particularly have been involved in contesting
railroad proposals to remove excess train brakemen and associated railroad efforts to gain the repeal of state full-crew laws.\textsuperscript{51}

With diesel en route maintenance generally recognized as infrequent or completely absent, the firemen had to rely upon the lookout role as the basic justification for diesel freight firemen positions. However, the firemen's organization was aware its testimony to the Commission on the freight diesel firemen lookout role was also tenuous, because the railroads claimed head-end brakemen could perform any lookout duties required. Nevertheless, the firemen presented their case to the Commission on the road freight fireman lookout role just as if there were no such position as head-end brakeman. Perhaps, the firemen felt that by ignoring the head-end brakeman in their presentation, the Commission might forget such a crew position existed. Of course, the carriers never would have allowed such a lapse of memory to occur. It appears that on this point, the Brotherhood of Locomotive Firemen made one of its most serious strategy errors in the total diesel crew dispute. The firemen would have strengthened their case on the lookout issue, if they had tried to show the head-end brakeman normally was not available for lookout duties on road freight diesels.

The manner in which the firemen's union could have dealt with the road freight head-end brakeman problem involved the basic duties of the head-end brakeman position. This position was created to accomplish two general categories of duties. The first category involved head-end

\textsuperscript{51} For further reference on this point, see: A. Holmes Fetherolf, "Can Featherbedding Be Brought to a Stop?" \textit{Steelways}, November, 1959, Vol. 15, No. 5, pp. 5-8.
switching operations; the second involved observation of the train from
the head-end for mechanical failures, such as hot journal boxes, coupler
breakage, fire, derailments, etc. The latter area of responsibilities
could have been used effectively by the firemen to show the head-end
brakeman was not necessarily available for forward lookout duties. For­
ward lookout duties involved observation of signals and right-of-way
ahead. The firemen might have claimed that the head-end brakeman simul­
taneously could not observe conditions ahead and the train behind. A
layman probably would have retorted that train observation was not a full
time affair, and, consequently, only occasional glances to the rear were
necessary. Experienced railroad personnel, however, have agreed that
constant attention must be given to both the condition of a train of
freight cars, and the signals and right-of-way ahead. This is especially
ture today in the case of exceptionally long multi-unit diesel-powered
freight trains.

The importance of train observation clearly was recognized even
in the heart of the steam era, when freight trains were of much shorter
length. The proof of this lies in the construction of freight steam
locomotive tenders. Such tenders often had a small head-end brakeman
shelter or station (known as a "dog house" or "cupola") located immedi­
ately behind the coal or oil bunker. The view from this cupola was to
the sides and rear only, as it was to be used by the head-end brakeman
for full time train surveillance. Multi-unit diesel locomotives actually
could have provided a similar facility for freight train observation.
The rear unit of a multi-unit diesel locomotive, with its control cab
pointed to the rear of the train, could have housed the head-end
brakeman. This would have permitted more effective visibility of the train than observation from the windows of a crowded diesel forward control unit. A simple internal communications system would have allowed the head-end brakemen to contact the forward unit operating crew whenever necessary.

If the Brotherhood of Locomotive Firemen had been able to convince or force the railroads to place head-end brakemen in rear diesel unit cabs, the union would have been in a position to demand the assignment of firemen to freight diesels for forward lookout and engineer assistance purposes. Public opinion very likely, could have been swayed to the firemen's side on the issue, because of the safety considerations involved. In the case of freight single-unit diesels, or multi-unit diesels with only one A unit (Control Cab Unit - See Chapter II), the head-end brakeman would have to be assigned to the forward control cab. However, the firemen's union could have claimed even this situation demanded firemen, since the head-end brakemen could not be expected to observe effectively in both directions. For some unexplained reason, the firemen's organization never pursued any of these arguments regarding the roles and positions of head-end brakemen on diesel-powered freight trains.

In answer to those who might have questioned why a full-time train lookout had not been used on passenger trains, a simple explanation was readily available. Passenger trains were usually not long (a twenty car passenger train was considered quite long), and, in addition, trainmen (brakemen, conductors, baggagemen, postal clerks, attendants, porters,
and dining car personnel) were scattered throughout the train. These men were in a position to detect and report train malfunctions.

The strategy of the carriers on the freight diesel fireman lookout issue was to prove to the Commission that there was little need for such a forward lookout, that the fireman was not particularly effective as a forward lookout anyway, and that if any forward observation was required, the head-end brakeman could accomplish it. The railroads made a concurrent effort to prove there was absolutely no safety consideration dictating firemen be assigned to freight diesels.

The carriers testified to the Commission that diesel firemen observation of signals was so ineffective, automatic signal warning devices (known as Automatic Train Control) had to be placed in locomotive cabs to aid engineers in signal detection. These mechanical signal warning devices not only warned the engineer of track conditions, but, in addition, stopped the train if the engineer failed to respond to a restrictive signal. In research for this study, the author had an opportunity to see a high-speed passenger train brought to a conventional stop upon the engineer's failure to heed a red restrictive signal. The railroads claimed such automatic devices made it unnecessary to have any personnel in the locomotive control cab for the purpose of checking signals with the engineer. In fact, the railroads contended a mechanical warning system was far more dependable than human signal checks, since it was not subject to any kind of distraction.

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52 Transcript of Proceedings of the Presidential Railroad Commission, p. 47
Passenger steam locomotive operation also fortified the railroads' position on the fireman lookout role. A steam passenger locomotive crew consisted only of an engineer and fireman. The fireman was seldom available for any kind of lookout duty, as he was busy firing the locomotive; this was true even on stoker equipped steam locomotives, due to the complexity of stoker operation. As pointed out previously, steam-powered passenger trains often maintained speed schedules commensurate with modern diesel-powered passenger service. In a number of cases, steam-powered passenger trains had faster schedules than do their current diesel-powered counterparts.

The railroads argued from a position of considerable strength in their attempt to show that the road freight diesel fireman had no general safety value. It generally was recognized that diesel firemen had not been particularly effective in their signal observation duties. As discussed above, this condition influenced the installation of automatic devices in locomotive control cabs to double check engineer response to right-of-way signals. In fairness to the firemen, however, no matter how effective firemen had been in signal checking, it is likely that such automatic signal warning systems would have become standard locomotive equipment; this was a normal step in railroad technological progress.

In regard to freight diesel operations, the railroads claimed that the three members of the locomotive crew (engineer, fireman and head-end brakeman) distracted each other from complete attention to their work. A railroad witness commented to the Commission about the
situation, by quoting the following statement of George Washington:

"My observation is that whenever one person is found adequate to the discharge of a duty by close application thereto, it is worse executed by two persons, and scarcely done at all if three or more are employed therein."53

This remark in effect, was just an earlier and more concise statement of what later became known as Parkinson's law.54 The carrier witness, of course, was indicating this statement of the First President was applicable to a freight diesel crew.

Assuming that a road freight diesel locomotive could be operated effectively by just an engineer, then the presence of two other men in the narrow confines of the control cab could contribute nothing but confusion to the situation. The research for this study did not support the previous carrier implication that the engineer effectively could operate a diesel freight train without assistance from other "parasitic" engine crew members. It appeared to the author that the forward and train lookout safety roles were vital, and had to be performed by someone other than the engineer. Perhaps, these lookout functions could have been accomplished best by placing the head-end brakeman in the cab of the rear diesel unit, and a fireman in the control cab of the forward unit, when such an arrangement was feasible.

The research for this investigation thus did lend some credence to the value of a three man diesel freight engine crew. However, it was...

53 Ibid.

also apparent that when the three engine crewmen were working in the same control cab, considerable unnecessary talk and confusion prevailed. The author noted there were times, especially if the three crewmen were arguing, that the sound of voices overcame the diesel engine roar. In particular, the author recalls an episode in which the three crewmen became so involved in an argument over the raising of certain fruits and vegetables, that a fist fight nearly broke out in the cab. The train, during the heart of the argument, was moving at a speed of between forty-five and fifty miles per hour, with approximately 140 cars in tow. Even in two man passenger service, distracting conversation was noted between the engineer and fireman at speeds above sixty miles per hour. It was readily apparent in such situations that had the engineers concerned not been so experienced, and thus automatic in their reactions, train safety and operating efficiency would have been imperiled. Even so, neither the engineer, nor any other crewmember, could have been completely efficient under such circumstances. From the standpoint of the author's experience, the only time there was complete quiet in the diesel control cab and signal checks were accomplished effectively, was in a situation where the crew members previously were unacquainted. According to engine crew dispatchers, this was a rare situation, as on most divisions, engine crewmen, at one time or another, had occasion to meet. In fact, many engine crew members continually served together, since they drew their assignments on a seniority preferential basis. The boredom of firemen on diesel locomotives has caused some dangerous repercussions, most of which have had safety implications.
As discussed in Chapter III, firemen boredom became an important consideration of railroad personnel officials, immediately upon the assignment of firemen to diesel locomotives. Former steam firemen who were accustomed to constant challenging work on steam locomotives, found the lack of work on even the primitive diesels an invitation to boredom and all of its pitfalls. After the elimination of en route maintenance on later model diesel engines, the diesel firemen boredom problem became quite severe. With engine room work absent, except for occasionally picking up a warning flare left by a train close ahead, taking orders on the fly, and checking a few cab instruments, the diesel fireman had little to do other than observe signals and right-of-way. Constant gazing at the terrain and tracks from the moving locomotive tended to hypnotize firemen, with fatigue and drowsiness as symptoms. This condition, coupled with the monotony of just sitting with virtually nothing to do, significantly reduced the alertness and job interest of diesel firemen. It is, therefore, not difficult to understand why the railroads have had a number of cases of diesel firemen sleeping and drinking on the job.

The following statement was made to the Presidential Commission by a railroad witness to indicate the severity of the diesel firemen sleeping and work inattention problem:

Firemen have frequently remarked to me about the difficulty of remaining awake, particularly on yard engines. There have been any number of cases where locomotive firemen on diesels have become drowsy on account of not having any work to perform and have taken a nap while on duty. Investigations have been conducted when firemen have admitted that they were asleep on yard locomotives. Up until the past eighteen to twenty-four months, there have even been
instances when the fireman and engineer swapped off, and while the fireman was actually operating the locomotive, the engineer would take a nap on the fireman's seat box. Nevertheless, since the advent of diesel locomotives, and right down to date, it has not been uncommon to find magazines, newspapers, and comic books, as well as peanut hulls and other debris on the fireman's side in the cab of the locomotives. When our yard engines were delivered from the manufacturer, they were equipped with adjustable seat backs on the fireman's side of the cab; by manipulation these seat backs could be lowered, permitting the fireman to ride in a reclining position. Frequently six-foot cushions from the caboose cars were found on yard locomotives and were used as mattresses for featherbedding. In some instances, the fireman did not even make up his bed after using them. It became necessary for us to remove all adjustable backs and to redesign the fireman's seat, welding the back upright, so that the fireman would have to remain in a sitting position. On road freight and passenger locomotives, the dashboard on the left side of the locomotive was used for a foot rest by the fireman; and this area was always the first portion of the locomotive needing repainting after the locomotives were put in service on their initial assignments or after having been repainted in one of our repair shops. Road foremen and trainmasters have been instructed to see that this practice is discontinued, but the practice is still in effect. I found the same condition on other railroads that I visited. When we began equipping all locomotives with an emergency brake valve on the left, or fireman's side, it was soon disclosed that the firemen were using the brake valves, which were approximately eighteen inches above the floor level of the cab, for a foot rest. After experiencing several accidental emergency applications of the brakes, it became necessary to cover this valve with a metal guard in order to prevent the fireman, while using it as a foot rest, from inadvertently applying the brakes in emergency. 55

The research for this study verified certain portions of the previous statement. The author cannot recall one diesel locomotive that he was aboard where the paint was not chipped, peeling, or completely off the dashboard in front of the fireman's seat. In every case where railroad

officials were queried by the author about this condition, they commented that it was caused by a reclining fireman's feet. There seemed to be no other likely cause. Trash, such as candy wrappers and magazines, was also a common sight in the control cabs of diesels the author was aboard.

It is interesting to note the commercial airlines have experienced a sleeping and reading problem among their jet crew personnel. The personnel problems concerned with staffing diesel locomotives and jet airliners have had some strikingly similar aspects, particularly in regard to the number of crew members required and their operational duties. The key issue in both cases has been technological change, and employee reaction to it. As the diesel displaced the steam engine, so did the jet replace the piston type aircraft; railroad and airline employee resistance to the new technology generally followed the established text book pattern, but with some new twists.

In a number of cases, "diesel boredom" appears to have caused drinking among engine crew members on duty. Several railroad employees told the author that they knew of drinking in diesel control cabs. One railroad official elaborated on this subject by stating that the physical layout of a diesel control cab facilitated bringing a bottle into the cab, and then drinking on duty without being noticeable to anyone outside. The railroads had become aware of the diesel drinking problem


57For text references on the subject of employee resistance to technological change, see footnote number 6, Chapter III of this study.

58Statement made to author by official of Railroad Y, March 22, 1962.
through drunken behavior and alcoholic odors of certain engine crew members, as well as occasional findings of empty bottles in the control cabs. The Interstate Commerce Commission indicated one of the most disastrous passenger train wrecks in recent years was caused, in part, by engine crews drinking on duty. This accident involved a diesel-powered Northern Pacific passenger train which left the rails on June 10th, 1962, near Missoula, Montana, killing one person and injuring 272 others. The Interstate Commerce Commission stated that the two enginemen controlling the train were drinking, and that the accident was caused by "culpable human failure."

Even if on duty sleeping, reading, and drinking by diesel firemen could not be traced to diesel boredom, other negative safety implications have been apparent in regard to a crew position with very few meaningful duties to perform. One railroad witness stated to the Commission that, due to the boring nature of the job, it was questionable whether a diesel fireman served any useful safety lookout purpose. The witness clarified this remark by stating that, since the diesel fireman has had "nothing to do," his wandering mind tended to make him an ineffective lookout. The witness seemed to be implying a thoroughly busy crew

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59 Ibid.
61 Ibid.
62 Transcript of Proceedings of the Presidential Railroad Commission, p. 482.
63 Ibid.
member would concentrate more effectively on all aspects of his job. It would appear that idleness and lack of responsibility have reduced the job interest and work efficiency of diesel firemen. In addition, bored firemen have reduced the efficiency of other engine crew members by engaging them in distracting conversation.

One of the strongest aspects of the railroads' case on the safety value of diesel firemen involved the stopping of the train in the event of incapacitation of the engineer. The firemen's organization had been claiming a fireman was required for such an emergency. The carriers had a ready answer for the Commission on this issue. The railroads were not attempting to eliminate passenger diesel firemen; thus diesel-powered passenger trains were not a consideration in the matter. On freight and yard diesels, from which the carriers were seeking to remove the firemen, head-end brakemen normally would be aboard to stop the train in an emergency. In addition, most road diesels were equipped with the "dead man's control" which automatically stopped a train in the event of engineer incapacitation.

The dead man's control consisted of a pedal located by the engineer's foot. The engineer was required to depress this pedal whenever the train was moving. If the foot of the engineer left the control pedal while the train was underway, power was shut off, and air brakes automatically were applied to bring the train to a "service" stop. 64 The author saw this device in use in diesel control cabs during the research for this investigation. The engineer was well aware that, although the

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64 A "service" stop is railroad vernacular for a gradual or normal stop of a train.
device was somewhat of a nuisance, removal of his foot from the pedal would cause an unscheduled and uncalled-for stop of the train. On March 26, 1963, the author was a passenger on the Cincinnati to Atlanta, Southern Railway passenger train, "Royal Palm," which made an automatic stop near Robbins, Tennessee, upon the sudden death of the train's engineer. The stop did not appear abrupt or unusual in any manner to the passengers aboard the train, none of whom apparently had any idea of the circumstances involved.

One railroad official told the author that some engineers have attempted to inactivate or defeat the dead man's control by using a stick to depress the control pedal. This problem was discussed in testimony presented to the Presidential Railroad Commission. The carriers have contended, however, that engineers attempted to defeat the dead man's control system, only because they knew there were others in the cab to stop the train in an emergency. Thus railroad officials have claimed the very presence of a fireman, or even head-end brakeman, in the control cab, caused some engineers to inactivate an automatic emergency system, perhaps, more effective than any human could be.

Yard Work is Examined by the Commission

Yard service received its most thorough analysis in the diesel dispute from the Presidential Commission. Yard work has included car classification, train make-up and break-up, industrial switching, and

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65 Statement made to author by official of Railroad Y, March 22, 1962.

transfer of cars between railroads, terminals, and yards in the same geographical area. Car classification, switching, and related train make-up and break-up operations have consisted of about 50 per cent of all yard service. Industrial switching has comprised about 35 per cent of total yard work. The remaining 15 per cent of yard operations has consisted of railroad interchange and transfer service. Yard crews traditionally have consisted of an engineer, fireman, two brakemen, and a yard conductor or foreman. Yard operational speeds usually have been limited to between five and ten miles per hour. Most railroads have restricted yard speed to a figure which allowed a train to be stopped within a distance of one half of the engineer's range of vision.

The railroads claimed firemen were not needed on diesel yard engines. Diesel locomotive on route maintenance had become a rarity, and, in fact, had been precluded by the hood-type diesel commonly used in yard service. Even if in service mechanical breakdowns occurred in yard operations, the yard diesels usually were near a terminal repair facility staffed by maintenance technicians. Thus the yard diesel fireman was left with little to do other than observe human or mechanical signals and right-of-way conditions. The railroads argued such signal or right-of-way observation could be carried out by one of the yard crew brakemen. This argument was similar to the carriers' position on the road freight firemen issue.

The Brotherhood of Locomotive Firemen, of course, claimed the carriers' argument on yard diesel firemen was invalid. The firemen did not base this challenge, however, on maintenance issues. Hood-type diesels, proximity to specialized diesel repair facilities, and the
proven mechanical efficiency of modern diesels ruled out such a stand. The firemen thus chose to defend yard diesel firemen positions on safety and operational efficiency considerations.

The firemen's organization claimed a fireman was required aboard yard diesels to convey switching signals given from the left side of the train to the engineer. In the particular case of a yard train on track-age curving left, a hand-signal from the rear of the train only could be seen by someone on the left side of the locomotive cab. The firemen's union contended that with the yard brakemen out throwing switches and coupling cars, only a fireman would be in position to receive such a left of train signal. In general, the firemen argued that with a brakeman seldom available to be in the yard engine's control cab during switching maneuvers, a fireman was required for lookout duties on the left side of the train. The great number of intricate maneuvers under the control of hand signals which normally took place in congested railroad yards, gave strength to the firemen’s argument. From just the standpoint of the safety of operating and maintenance personnel working in the yard, it appeared there should be a lookout from the left side of the locomotive cab. The engineer's vision especially was restricted to the left when the locomotive pushed a train of cars. The problem was not near as acute when the engine was the lead unit of the train (pulling cars), or when the engine was operating without cars. The research for this study indicated the yard brakemen were frequently out on the right-of-way, and, therefore, were not usually available for yard diesel cab lookout responsibilities.

67 Ibid., p. 281.
City grade crossing laws also received attention by the Brotherhood of Locomotive Firemen in their testimony to the Commission. It was pointed out by the firemen that various cities required a crew member to flag an unprotected grade crossing before the train could proceed over it. Grade crossings were not uncommon in railroad yards, since the yards often were located in the centers of metropolitan areas. It usually was not practicable to place automatic warning signals at such crossings, due to the stopping and back and forth motion of yard trains near the crossings. The signals constantly would be in action, even though the trains might never appear on the crossings. Auto traffic in such a situation would be stopped and backed up, and often for no reason. In addition, since trains operated at low speeds in the yards, there appeared to be no need for full time crossing guards or grade crossing automatic warning devices. Nevertheless, various cities demanded grade crossings be guarded before trains could proceed over them. Under the circumstances, the only practicable way to guard the crossing was through the use of a yard train crew member. If switchmen or brakemen were not available for such duty, a fireman would have to be aboard the engine to flag the crossing.

The carriers contended there was no requirement for firemen to be employed upon yard diesels for lookout purposes. Witnesses for the railroads told the Commission that the use of firemen to relay yard hand-signals to the engineer was "neither the most desirable, nor the safest

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68 Ibid.
practice. The carriers stated that yard signals should and could be given directly to the engineer. Such direct communication, the railroads claimed, was feasible through proper positioning of the yard crew, or through the use of rear-view side mirrors, two-way radio, and dual-control yard diesels. The carriers also claimed yard engineers preferred to work directly with the various brakemen and switchmen in switching maneuvers, "without the intervention of a fireman."

Perhaps, the most convincing argument of the railroads on the entire yard diesel firemen issue, was built upon the duties of firemen on steam yard locomotives. On steam yard engines the firemen were so busy fueling the locomotive, they had little, or no, time available for lookout duties. Thus the yards were constructed in the steam era with this problem in mind. The carriers claimed switches and fixed mechanical signals were placed so that they usually were directly visible to the engineer. It was pointed out by the carriers that modern dieselized railroad yards also were built so that the engineer normally could receive hand-signals in a direct manner.

69 Ibid., pp. 371, 372, 528, 555.
70 Ibid.
71 Dual-control diesel locomotives have been equipped with operating controls on both the left and right sides of the cab, much the same as airplane dual-control systems. Many yard diesels have been constructed with dual-controls to facilitate switching operations. If the engineer could not see the right-of-way or signals from his normal position on the right, he could shift over and use the left side controls.
72 Transcript of Proceedings of the Presidential Railroad Commission, p. 372.
73 Ibid., p. 528.
74 Ibid.
According to the railroads, the problem of giving switching signals directly to the engineer was greatest in industrial switching. Industrial sidings, with their unusual turns and placement of switches, and close clearances, often made it necessary to transmit switching signals to the engineer through a fireman. However, the railroads stated that this condition could be eliminated through the construction of mechanical signals on posts above car height, or through the use of dual-control locomotives and two-way radio.

The low operating speeds of yard engines and the strictly enforced yard rules on train movement and switch alignment, obviously influenced the yard diosel firemen issue. For example, if an engineer was in doubt about a switching signal, the train had to be stopped until the signal was verified. It also was a usual yard requirement that, before a switching move began, all switches had to be aligned properly along the route of the entire move. So other yard crew could change these switch positions until the track concerned was cleared. Above all, standing cars and locomotives never could be left in a position where they would block an adjoining track. Even with all of these considerations, plus such devices as two-way radio and dual-control locomotives, there still appeared to be some need for a man on the left side of a yard locomotive cab.

The author's experience has indicated that, even in the most advanced and automated railroad yards, a yard engine occasionally may require two men in the cab for safety and operational efficiency.

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75 Ibid.
purposes. Although it would be difficult to deny that switching signals should be given directly to the engineer, it seems equally difficult to deny the value of the observing eyes of a second man in the cab in the complex movements of busy railroad yards. It is apparent that the brakemen could be out coupling cars or throwing switches, and, therefore, not be available for such duty. This would leave only the conductor or fireman to fill a position on the left side of the yard engine cab. The conductor, however, could be involved on the ground supervising the switching movement. There is no doubt that a second man would not be needed at all times in the cab of a yard engine for lookout duties. The question then appears to be, whether the cost of a full time second man in the cab of a yard engine would be greater than the efficiency and safety contribution he could provide. Only the experience of operating without such a man would answer this question.

Diesel Locomotive Crew Training

The problem of training diesel locomotive crew members received major attention in the Presidential Railroad Commission hearings. This was due to the argument of the firemen's organization that the elimination of diesel freight and yard firemen would jeopardize the supply of future engineers. The Brotherhood of Locomotive Firemen based their claim on the standard railroad practice of using the fireman position as the prerequisite step and training ground for the future engineer. Apparently, it always had been assumed that fireman experience provided the best possible background for engineer training. Thus, traditionally, engineers invariably had come from the ranks of firemen. As pointed out
previously, in railroading, to say that something is traditional is to say that it was right, it is right, and it always will be right. Therefore, anyone who would argue about the merits of a railroad tradition obviously would be incorrect, regardless of the circumstances involved. It was this type of circular reasoning that the firemen's organization essentially was using in its argument on the engineer training issue.

Most railroad engineer training programs have tended to be very informal in their structure. Generally speaking, firemen have received engineer training, due primarily to their own initiative and the cooperation of engineers. The railroads, over the years, have displayed very little interest in either developing or conducting well organized and thorough engineer training programs for firemen. In fact, the work rules and seniority systems instigated by the railroad labor organizations seem to have had a more important role in governing fireman advancement to the engineer position, than management initiated procedures. In certain cases, railroads have conducted some formal classroom courses for firemen on the principles of locomotive operation, such as air-braking and acceleration. A few railroads even have made use of classroom simulation techniques in this regard. However, such formal company engineer training programs have been rare, and, even where existent, relatively incomplete.

A great number of firemen have learned the basic theory of operating a locomotive only through correspondence courses, library reading, and questioning and observing experienced engineers. The practical training to prepare firemen for engineer duties always has involved on-the-job training, with the engineer as principal instructor. The
engineer's instructional ability, interest, and desire to cooperate, have been the major limiting factors in this type of training. Since railroad seniority systems have protected the engineer's job, there has been no problem of the engineer fearing job competition from a well-trained fireman. According to railroad work rules, firemen have been promoted to engineers only when vacancies have occurred as a result of retirement, disability, death, disciplinary suspension, or some other form of attrition of current engineers.

Under normal circumstances, the fireman first has been assigned to yard work, and, as his seniority has increased, in turn has been assigned to road freight and passenger service. Concurrent with the various types of service assignments, the fireman received his engineer training and the required engineer examinations. These examinations, making a fireman eligible for promotion to engineer, usually have been given in an annual series covering a three to five year period. Eligible firemen then have been promoted into engineer vacancies on a seniority basis.

Witnesses for the firemen's organization testified to the Commission that passenger firemen traditionally possessed considerable experience in locomotive operation before being assigned to passenger service. This was a result of their required earlier fireman duty on yard and freight engines. If yard and freight engines were to operate without firemen, the union claimed there would be no training ground for passenger firemen. The new firemen assigned to passenger trains thus

76 Ibid., p. 285.
would be inexperienced in all aspects of practical locomotive operation. From a safety standpoint, the Brotherhood of Locomotive Firemen argued this was not a desirable situation. In addition, the union claimed the relatively few passenger firemen positions would not be sufficient to train the new engineers required in all types of engine service.

The firemen also argued that the existence of even the most informal railroad sponsored engineer training programs, proved the need for locomotive firemen in all categories of engine service. According to the firemen, all of these programs were aimed at training firemen to be engineers, and no provision was made to obtain engineers from any other source. Railroad officials countered this claim of the firemen's union by stating that such training programs recognized the need for engineers, and not firemen; firemen were simply an expedient, but not indispensible group from which to obtain engineers.

The railroads have resorted to some very questionable tactics in attempting to refute the firemen's claim that to have a continual source of competent engineers, firemen must be employed on all diesel locomotives. The carriers repeatedly have insisted the job of a diesel engineer in any type of engine service is so simple, an inexperienced man could be taken off the street and trained to be a competent engineer in a matter of days. It is indeed difficult, however, to conceive that operating modern diesel-powered trains is as simple a task as management has implied. The research for this study indicated the job

77 Ibid., p. 283.
78 Ibid., p. 275, 376, 431, 473.
of a diesel engineer in passenger, freight, or yard service, in fact, has been a complex task, not easily or quickly learned, and that experience has been the most important factor in a diesel engineer's job. It appears that the required operating experience level for a fully qualified diesel engineer, particularly in regard to air-braking, should be measured in terms of years, not days.

Statements by the railroads on the "simplicity" of diesel locomotive operation have been misleading, if not absurd. In addition, such statements minimizing the importance and complexity of the diesel engineer's job, have tended to reduce the status, morale, and effective interaction of diesel engine crew members. With the carriers having taken such a position regarding the diesel engineer's job, it is obvious they placed little validity in the argument of the firemen's organization for experienced passenger diesel firemen.

In reference to a source of future engineers, the carriers stated that passenger diesel firemen would continue to provide a ready source of experienced engine service personnel eligible for promotion to engineer positions. In addition, the railroads pointed out that brakemen, particularly head-end brakemen, conductors, and various shop craft personnel "easily" could be trained to fill vacant engineer positions. The carriers claimed the brakemen and conductors had actual train operational experience, while shop craft personnel had technical familiarity with the mechanics of locomotive and train operation. The strange thing

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79 Ibid., p. 375.
80 Ibid., p. 376, 431, 473, 474.
about the railroads' position on diesel engineer training was that, on one hand, they consistently denied the importance of the experience factor in the issue; on the other hand, however, they constantly cited examples of "experienced" personnel who still would be available for promotion to engineer, after diesel freight and yard firemen were eliminated. This was just another paradox in a dispute which long had left a normal line of reason.

Diesel Locomotive Intra-Crew Relations

The subject of diesel locomotive intra-crew relations came up in several instances during testimony presented to the Presidential Commission. There is no doubt that the diesel locomotive has had a negative impact upon the relationship and interaction of engine crew members. The closeness and effective team interaction of crew members on the steam locomotive conspicuously have been absent on diesel motive power. This condition has reduced the potential efficiency of dieselized railroad operations. During the research for this study, the author noted in a number of cases, coldness, if not bitterness existent between engineers and firemen on diesel locomotives. In such cases, it was quite obvious there was a lack of team work, particularly in signal and mechanical checks between the two engine crew members. The only time the author observed a close working relationship and mutual respect between a diesel engineer and fireman, was in an instance where the two previously had served together on a steam engine.

The breakdown in effective crew relations on diesel locomotives appears to have been a direct result of changed locomotive technology,
the union-management controversy over diesel locomotive operation, and inter-union jurisdictional fights.

The electro-mechanical design of the modern diesel locomotive, undoubtedly, has been the dominant factor in this problem. It is not difficult to understand the resentment of an engineer toward a high salaried diesel fireman with little, or nothing, to do. In those instances where the diesel fireman has been reading, drinking, or sleeping on the job, the engineer's resentment of the fireman, obviously has been compounded. The fatigue and hypnotic effect of doing nothing but observing terrain and signals have caused diesel firemen occasionally to miss signal and right-of-way checks with engineers. Such actions have caused engineers to lose confidence in the firemen, as well as to lose further respect for them. One engineer remarked about his fireman to the author, "He is the most useless person I have ever met in my life." What struck the author most about this remark was that the fireman in question, a relatively young man, seemed to be very sincere and intent on doing a good job. There just wasn't much for him to do, and he had adjusted perfectly to the situation; he simply did nothing. The problem was that, through no direct fault of his own, the fireman was caught in a dilemma caused by technological change. The whole situation was a far cry from the days of steam, when the engineer's job performance was highly dependent upon the efficiency of his fireman.

During the Commission hearings, one railroad witness summarized the management outlook on the problem of the diesel fireman's

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81 Comment made to author by senior engineer of Railroad Y, April 18, 1962, while aboard diesel locomotive powering a high-speed passenger train.
relationship with other railroad operational personnel as follows:

The inauguration of diesel service on the Atlantic Coast Line resulted in conductors becoming dissatisfied, as it was very evident that the firemen had no work to perform and yet were receiving, in some cases, wages that were higher than the conductors'. The lack of work required of the fireman is, of course, general knowledge among other train and yard service personnel. And this feature is very disheartening to other employees, particularly to yard crews exposed to rain, snow, and other weather conditions, when they observe a fireman sitting on the left side of the locomotive with nothing to do and earning more money than they do. Diesel firemen, particularly those on the top of the seniority list who were assigned to passenger service, no longer have any desire for promotion to engineer, where they may be required to do a certain amount of work. 

Of course, such generalized statements by management only served to aggravate the situation, and, correspondingly, placed firemen in an even more unfavorable position in their relationship with fellow employees. Other public statements and actions by railroad officials downgrading the complexity and importance of diesel locomotive crew duties, such as those previously discussed, also have contributed to intensifying this problem.

The Southern Railroad certainly deserved an award of some sort for the originality it showed in its August, 1963, action to minimize the significance of the diesel fireman's job. The Southern hired ninety "elderly, inexperienced" Negroes as diesel firemen. A spokesman for the Brotherhood of Locomotive Firemen and Enginemen said that these firemen were not familiar with railroad signals or diesels, and were

82 Transcript of Proceedings of the Presidential Railroad Commission, p. 478.

told to do nothing but sit in the locomotive cabs. In addition, Mr. Ralph McCollum, vice president of the firemen's union, stated that some of the firemen in this group were illiterate, some were blind, and all were assigned without previous experience or training; he further remarked that the men were over sixty years of age, with the oldest being eighty-five. The Southern Railroad did not hesitate to admit the Negroes were hired, because "firemen do not have any duties to perform in a diesel and the Negroes needed the money." It is indeed doubtful whether the Southern really desired to improve the economic welfare of Negroes through its action in this matter. The author saw several of these firemen in action, and noted they had great difficulty even getting in and out of the diesel locomotive cabs. The entire venture was a crude and uncalled for attempt to exploit a minority group, in order to make a management point in the diesel dispute.

The status of the diesel fireman also has suffered as a result of a play by management on the term "fireman." A number of railroads removed the word fireman from their operational rule books in the 1950's, and inserted in its place, the unimpressive term "helper." The railroads justified this action by stating that, since there was no fire to attend on diesels, the word helper more accurately described the position in question. Several railroad officials, however, told the author that the real purpose in this maneuver was to remove the word fireman from

84 Ibid.
85 Ibid.
86 Ibid.
railroad vernacular; the railroads felt this action, in turn, would facilitate the removal of the actual firemen positions from diesel locomotives. It appeared management's strategy was to destroy the self-respect of the diesel fireman, and, thereby, destroy the diesel fireman position. The railroads, obviously hoped no one would wish to occupy or be identified with such a "humiliating" position.

As if the diesel firemen did not have enough difficulty with the above problems in maintaining effective working relationships with fellow employees, they also were caught in the middle of the various inter-union jurisdictional fights of the diesel dispute. The struggle between the engineers' union and the firemen's organization over the issue of assistant diesel locomotive crewmen, particularly impaired the relationship and interaction of diesel engineers and firemen. By the middle 1960's, the Brotherhood of Locomotive Engineers had become as great, if not a greater menace than management, to the survival of both the craft and union of locomotive firemen. This point is discussed further in the remaining section of this chapter.

The Report of the Presidential Railroad Commission

After considering the volumes of testimony presented to it by both labor and management on the diesel dispute and other contemporary railroad labor problems, the Presidential Commission released its long awaited report on February 28, 1962. There had been widespread speculation for several months in labor and financial circles regarding the
Commission's findings. The nation was aware that a possible major railroad strike hinged on the outcome of the Commission hearings. Perhaps, a more rampant fear was what action the government would take, if such a strike did come about. It also was argued that the railroads immediately had to improve their operating efficiency and profit position, if they were to continue to remain under private ownership. A key to raising railroad profits would be the elimination of any unnecessary employees. The railroads, of course, had claimed that the diesel fireman was the most unnecessary of all railroad employees.

There was clearly much at stake in the report of the Presidential Railroad Commission.

In regard to the composition of diesel locomotive crews, the Commission recommended the elimination of "virtually" all firemen on freight and yard diesels; those firemen with ten or more years of seniority would be allowed to remain in firemen positions until they quit, retired, or died. It was estimated that 13,000 firemen positions (approximately one third of the total number of diesel freight and yard firemen jobs) would be eliminated, within a year, if this recommendation was carried out by the railroads. The firemen affected by such


88 Ibid., p. 1.


90 "Railroads to Eliminate 13,000 Firemen's Jobs," The Cincinnati Post and Times-Star, July 18, 1962, p. 17.
railroad action would be "furloughed" and placed in a general labor pool, from which other vacant railroad jobs would be filled. The remaining diesel freight and yard firemen positions (estimated around 27,000 firemen jobs) would be eliminated as their occupants quit, retired, or died. Thus, over a ten year period, according to the Commission recommendation, approximately 40,000 firemen positions would be eliminated.

Railroad labor really was not taken by surprise by the Commission's diesel firemen recommendation. Shortly before the Commission released its report, one high level railroad union official had stated relevant to the expected report: "The way things look now, we're about to get the worst jolt we've ever received - a real teeth-rattler." The "jolt" came, as predicted, and railroad labor's reaction to it, obviously, was quite negative. The carriers announced plans to invoke the Commission's work rule recommendations, including the one regarding diesel firemen, on August 16, 1962. The railroad operating unions would be legally free to strike the same day the new work rules were placed in effect by the carriers. However, it was assumed that President John F. Kennedy would delay such a walkout for sixty days by

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91 Ibid.
92 Ibid.
94 "Railroads to Eliminate 13,000 Firemen's Jobs," The Cincinnati Post and Times-Star, p. 17.
95 Ibid.
establishing an emergency fact-finding board. The diesel dispute was following its normal pattern of confusion and frustration. A fact-finding board would have to be established to evaluate the recommendations resulting from an exhaustive study by a previous fact-finding board (the Presidential Commission).

The Congressional Compulsory Arbitration Board

With the threat of a national rail strike stirring it to action, the Congress of the United States established a compulsory binding arbitration board to settle the disputed railroad work rule issues. This board essentially considered the same testimony that previously had resulted in the disputed Presidential Commission recommendations. On November 26, 1963, the Congressional Arbitration Board announced its award in the case. The Board's ruling which would be in force for two years, covered only the diesel firemen problem. The other disputed work rule issues, such as train crew size and wage schedules, were to be negotiated between the carriers and the unions; however, if these issues were not resolved, they too would be subject to compulsory arbitration administered by the Federal Mediation Board. The Congressional Arbitration Board ruled as follows:

- Ninety per cent of the diesel freight and yard firemen positions could be eliminated (between 35,000 and 36,000 jobs).

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96 Ibid.
98 Ibid.
b. The carriers would be required to file within one week, a list of all diesel freight and yard firemen positions they felt were unnecessary.

c. These lists would be submitted to the union chairman of the various seniority districts. Each chairman then would decide which 10 per cent of the jobs in question he desired to retain.

d. Firemen with more than ten years of service would remain employed. If there should be more firemen with ten years of service than 10 per cent of the total diesel freight and yard firemen positions, the excess jobs would have to remain open until the incumbents retired, quit, or died.

e. Firemen with two to ten years of service would have to be given other railroad jobs, with no decrease in earnings for at least five years.

f. Firemen with less than two years of service would be discharged.

g. States with full-crew laws requiring firemen would not be affected by the arbitration award.

It was estimated that 65 per cent of the diesel firemen affected by the Board's ruling had more than ten years of service; the normal annual attrition rate of firemen was slightly over 5 per cent. Since the arbitration award, by congressional law, would be in force for only two years, it would be theoretically impossible for all of the "unnecessary" firemen positions to be eliminated under the congressional arbitration ruling. However, this restriction which significantly reduced the effect of the Arbitration Board's ruling was not surprising. For nearly thirty years, the diesel dispute had been characterized by the enactment of virtually meaningless agreements, recommendations, and rulings. It hardly could be expected that this traditional pattern

99 Ibid.
would change overnight, even with the introduction of the nation's first peacetime compulsory arbitration law.\textsuperscript{100}

In keeping with its standard pattern of behavior in the diesel dispute, the Brotherhood of Locomotive Firemen and Enginemen challenged the ruling of the Congressional Arbitration Board. Mr. H. E. Gilbert, the President of the Brotherhood, stated that both the arbitration ruling and the congressional law which allowed it, would be challenged in the federal courts.\textsuperscript{101} In their court presentations, the firemen claimed that the Congressional Compulsory Arbitration Law was unconstitutional. However, this claim was rejected by the United States District Court on January 9, 1964, and by the United States Court of Appeals on February 20, 1964; both of these Courts upheld the Congressional Arbitration Board's ruling.\textsuperscript{102} The next, and, seemingly, last step for the firemen in the matter, was to take its case to the United States Supreme Court.

The Supreme Court Considers the Ruling of the Congressional Arbitration Board

On April 27, 1964, the United States Supreme Court, by a unanimous vote, rejected the appeal of the firemen's union, and thus allowed the Congressional Arbitration Board's ruling on diesel firemen to stand.\textsuperscript{103}

\textsuperscript{100}"Railroads Eliminate 15,000 Jobs," \textit{The Cincinnati Enquirer}, April 1, 1965, p. 43.
\textsuperscript{101}\textit{Ibid.}
\textsuperscript{102}331 F. 2d 1020 (1964); 377 U. S. 918 (1964).
\textsuperscript{103}\textit{Ibid.}
No public statement was given by the Court regarding the reason for its decision. Although the firemen could have asked the Supreme Court to reconsider its decision, the Court's unanimous vote on the issue made such an appeal unlikely. Instead, the Brotherhood of Locomotive Firemen chose to ask the Arbitration Board in a May 7, 1964, meeting, to modify its diesel firemen ruling. The Board did not change its ruling, however, in any significant manner. It finally was determined that the arbitration two-year ruling would go into effect on April 1, 1966. Any elimination of diesel firemen positions after the March 31, 1966, deadline, would have to be renegotiated by the carriers and the Brotherhood of Locomotive Firemen.

The Effects of the Congressional Arbitration Award

By the end of the first year of the Congressional Arbitration Board's ruling, the railroads had eliminated approximately 15,000 diesel freight and yard firemen positions. A railroad spokesman said that only 11 per cent of the 15,000 firemen affected had appeared on railroad unemployment rolls. However, Mr. H. E. Gilbert, President of the

104 "Rail Union Loses in Top Court," The Atlanta Constitution, April 28, 1964, p. 1.
105 Ibid., p. 8.
107 Ibid.
108 "Railroads Eliminate 15,000 Jobs," The Cincinnati Enquirer, p. 43.
109 Ibid.
Brotherhood of Locomotive Firemen, claimed that 30 per cent of the 15,000 firemen were unemployed at the time, and that the railroad unemployment figures applied only to those former firemen eligible for jobless benefits. Of the 15,000 firemen eliminated during the first year of the arbitration ruling, 4,800 firemen had two to ten years of service. According to the provisions of the ruling, these firemen were offered other railroad jobs, with their then current wages guaranteed for five years. However, 83 per cent of the 4,800 firemen (about 4,000 men) chose to leave railroad employment and take severance pay, averaging $5,600 per man; by the end of the first year of the arbitration period, the carriers had paid out $30,000,000 in severance pay to eliminated firemen, with an expected annual saving of $75,000,000 in wages.

By late November of 1965, about four months before the expiration of the two-year arbitration period, a total of nearly 18,000 diesel freight and yard firemen had been eliminated under the provisions of the arbitration award. Of this number, 3,200 firemen employed by the railroads for two years or less were discharged, 5,000 firemen attrited (resigned, retired, or died), 1,000 firemen were assigned to passenger service, 4,000 firemen were promoted to higher level railroad jobs, and

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110 Ibid.
111 Ibid.
112 Ibid.
4,500 firemen chose to resign with severance pay (about $5,600 per man). By late January of 1966, it was estimated there were only 17,000 to 18,000 firemen employed by the railroads, about one half the number of firemen employed prior to the implementation of the arbitration award.

As expected, the impact of the Congressional Arbitration Board's ruling upon the firemen's union has been far more severe than its impact upon the individual fireman. Within one year, as a result of the arbitration award the roster of the Brotherhood of Locomotive Firemen and Enginemen had dropped 20 per cent, to 40,000 members (during the heart of the steam era, the firemen's organization claimed 120,000 members), and the treasury of the Brotherhood had dropped from $1,330,000 to $1,000,000. However, President H. E. Gilbert of the firemen's union commented: "We're not only going to survive, we're going to grow stronger." From the way things had been going for the firemen's organization, the preceding statement by Mr. Gilbert sounded more like "wishful thinking," or "whistling in the dark."

The Brotherhood of Locomotive Firemen and the railroads were expected to negotiate and develop a permanent solution to the diesel firemen problem, during the two-year interim covered by the compulsory

114 Ibid.
117 Ibid.
arbitration ruling. However, little has been accomplished in this regard to date. The firemen's union, on November 15, 1965, notified the railroads to begin collective bargaining on the diesel firemen issue. However, recent actions by officials of the firemen's organization had created a most unfavorable environment for such negotiations. For example, the firemen's union had been quite vociferous in stating that it would not accept the Congressional Arbitration Board's ruling on diesel firemen as the final solution to the problem. In addition, the firemen had been contending that upon the termination of the two-year arbitration ruling, the old contract requiring a fireman on every railroad locomotive again would be in effect.

Perhaps, the most antagonistic act by the firemen's organization, involved its nationwide newspaper campaign to enlist public support for the reinstatement of diesel firemen. This campaign, based on safety considerations, attempted to show that "an increase" in railroad accidents resulted from the elimination of diesel freight and yard firemen. Newspaper advertisements used in the campaign stated:

... The obvious relationship between the accident increase and the removal of firemen is a fact that railroad management tries to ignore. But, the record is clear. Nothing else has changed which could explain the continuing increase in railroad accidents.

The Brotherhood of Locomotive Firemen had been claiming that the railroads, through fear of weakening their position on the diesel firemen

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119. Ibid.

120. Ibid.
issue, had not been reporting all accidents as required by federal law. The railroads counterclaimed that the firemen's union was misleading the public through inflated and distorted accident statistics; the railroads argued that the firemen were including in accident statistics, "incidents as trivial as employees reporting cinders in their eyes." As indicated in Chapter II, the author has noted an increasing number of "unexplained" major railroad accidents in recent years. It is the author's view that these accidents have been caused by track and train mechanical breakdowns. It would appear that the presence or absence of a fireman in such accidents could be a factor in the following regard. As pointed out in earlier sections of this study, on freight trains, a head-end brakeman hardly could be expected to be an efficient observer of the track ahead, and the train behind; the placement of a fireman in the control cab of the lead diesel unit for right-of-way and signal observation, and a head-end brakeman in the rear unit cab of a multi-unit diesel for train observation, would seem to be the ideal arrangement. However, public statements made by officials of the firemen's organization regarding the relationship between the absence of diesel freight firemen and railway accidents, have been quite misleading in one respect. These statements have ignored the presence of head-end


122 Ibid.
brakemen, and thus have implied only engineers have been in the control cabs of freight diesels.\textsuperscript{123}

The carriers responded to the vehement antagonism of the firemen's union by instituting their own propaganda campaign on the diesel firemen issue. Like the firemen's union, the railroads utilized full page advertisements in major metropolitan newspapers to convey their views on the elimination of diesel firemen.\textsuperscript{124} These advertisements indicated that the elimination of diesel freight and yard firemen had given the nation a more efficient railroad system. Whereas the union advertisements were negative in nature, the railroad advertisements were positive in their message. However, this was to be expected, since the burden of proof rested on the firemen's union; the Brotherhood had to justify the need for reinstating displaced diesel firemen. The situation, obviously, was not ripe for the negotiation of a permanent diesel firemen agreement.

The Firemen Versus the Engineers

One of the most significant aspects of the Congressional Arbitration Board's ruling concerned its effect upon the relationship of the Brotherhood of Locomotive Firemen and the Brotherhood of Locomotive Engineers. Although the two unions had been at odds for sometime,\textsuperscript{123,124}

\textsuperscript{123}For a typical statement, in this regard, by an official of the Brotherhood of Locomotive Firemen, see: Dennis Holder, "Railroad Fires Engineers in Cobb Wrecks," The Atlanta Journal, July 22, 1964, p. 50.

particularly in regard to various issues of the diesel dispute, the compulsory arbitration ruling on diesel firemen caused the two unions to become absolute bitter rivals. The Congressional Arbitration Board's award had given momentum to the carriers' efforts to gain repeal of state full-crew laws requiring firemen on all types of locomotives. The engineers pulled out from joint railway union efforts to block the repeal of any state full-crew laws. The president of the engineers' union stated that there was no purpose in fighting a lost cause to save the firemen. In addition, the engineers urged that firemen leave the Brotherhood of Locomotive Firemen and join the Brotherhood of Locomotive Engineers (as indicated previously, the Brotherhood of Locomotive Engineers can represent firemen for bargaining purposes). As if to place acid in the wound of the firemen's union, officials of the engineers' organization told the remaining firemen to switch unions, and "get into the engine service organization with a future."

The firemen's organization responded to the membership raid by the engineers' union in two ways. First, the Brotherhood of Locomotive Firemen attempted to reverse the situation by conducting a membership raid on the engineers' union. Second, in a simultaneous action, the firemen's union attempted to talk the engineers' union into a merger of

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126 Ibid.
127 Ibid.
the two engine service organizations. 7 This kind of bizarre union activity only could occur in the diesel dispute, and it did, much to the chagrin of all concerned. The firemen's union, to date, has been generally unsuccessful in its efforts to solicit members from the engineers' organization. The Brotherhood of Locomotive Firemen also has been unsuccessful in its efforts to merge with the Brotherhood of Locomotive Engineers. Since the two unions currently are such bitter rivals, there is little likelihood of a merger between them in the near future.

The Future of the Diesel Crew Dispute

It must be recognized that, because of the inability of the carriers and firemen to negotiate a new diesel firemen agreement, the expiration of the Congressional Arbitration Board's ruling on March 31, 1966, leaves the diesel dispute in its usual state of flux. To make matters worse, the railroads, on January 31, 1966, announced plans to eliminate all diesel freight and yard firemen positions, as soon as the compulsory arbitration ruling expired (the arbitration award had stated that only 90 per cent of the diesel freight and yard firemen jobs could be eliminated). 130

The firemen's organization has contended that upon the expiration of the arbitration ruling, the old contract requiring a fireman on every locomotive becomes the governing agreement. Thus the firemen's

129 Ibid.
130 "Rails Propose Cutting All Firemen's Jobs," The Cincinnati Enquirer, February 1, 1966, p. 36.
union has stated that it will demand the reassignment of firemen to all
diesel freight and yard locomotives.\footnote{Railroads Approach Another Labor Crisis, The Wall Street
Journal, p. 3.} The carriers, on the other
hand, have claimed that the terms of the compulsory arbitration ruling
govern until a new agreement is negotiated.\footnote{James R. MacDonald, "Death of a Union? The Wall Street
Journal, p. 8.} It appears this problem
will have to be settled in the courts, where, unfortunately, legal
precedent for such a situation is not clear.

With very little left to lose, the Brotherhood of Locomotive
Firemen has indicated it will call a strike, if firemen are not returned
to all diesel locomotives upon the expiration of the two-year arbitration
ruling. If such a strike materializes, its success will depend, to a
great degree, upon the cooperation of other operating rail unions,
particularly the engineers' organization. Certainly, the railroads would
not be too concerned if the firemen, whom they want to eliminate anyway,
would strike. What would concern the railroads would be, whether the
engineers and other operating crafts would cross the picket lines of the
striking firemen. In a similar situation in the Canadian diesel firemen
dispute, the Brotherhood of Locomotive Engineers allowed its members to
cross the firemen picket lines and operate the trains.\footnote{Tbid. For a detailed discussion of the diesel crew dispute on
the railroads of Canada, see: Report of the Royal Commission on Employ-
ment of Firemen on Diesel Locomotives in Freight and Yard Service on the
Canadian Pacific Railway, December 18, 1957, and Report and Recommenda-
tions of the Canadian Board of Conciliation in Dispute between the
Brotherhood of Locomotive Firemen and Enginemen and Canadian National
Railways, Bureau of Information of the Eastern Railways (U. S.)
April 17, 1959, Circular Letter No. 2563.}
current state of relations between the Brotherhood of Locomotive Firemen and the Brotherhood of Locomotive Engineers, the firemen hardly could expect much strike support from the engineers.

The Brotherhood of Locomotive Firemen's case for the reinstatement of diesel freight and yard firemen received a severe blow early in January of 1966. At that time, a national joint labor-management board, established by the compulsory arbitration award to review freight and yard diesel operations without firemen, reported that the elimination of diesel firemen had not "adversely affected the employees or rail service in general." Of course, the firemen's union labeled the report a "complete hoax." What made this report so significant, however, was that an official of the Brotherhood of Locomotive Engineers, Mr. Charles J. Congulin, concurred with it, implying that diesel freight and yard firemen were unnecessary.

The firemen's organization has announced that it plans to negotiate separately with the various railroads over the diesel firemen issue, immediately upon the expiration of the Congressional Arbitration Board's ruling. The firemen often have preferred to conduct separate negotiations with the various railroads, in order to strengthen their bargaining position. The carriers have announced that since the diesel


136 Ibid.

firemen issue is a national problem, they will negotiate only on a collective national basis.\textsuperscript{138}

Although it appears that the diesel crew dispute will continue in 1966, after the expiration of the Congressional Arbitration Board's two-year ruling, drastic action on the firemen issue by either management or labor does not seem to be imminent. With a war effort to support in Viet Nam, undoubtedly the federal government would not allow a national, or even regional, railroad strike of any significance to take place. However, the strike appears to be the only weapon left to the firemen, in their effort to preserve their craft and union. From a political standpoint, as well as an economic and national security standpoint, the federal government could not allow the firemen to carry out a major strike in 1966. The situation would be extremely embarrassing and difficult to handle for the labor supported Democratic Administration of President Lyndon B. Johnson. Thus it can be expected that the diesel crew dispute, in 1966, will follow its customary pattern of threats, demands, challenges, board hearings, injunctions, and court decisions, but certainly no strike of any consequence. In fact, a ruling by a United States District Court on March 3, 1966, "virtually" eliminated the threat of a March 31, 1966, national rail strike by the Brotherhood of Locomotive Firemen.\textsuperscript{139} The Court ruled that the Brotherhood could not call a strike to force the railroads to reinstate the firemen

\textsuperscript{138} Ibid.

released under the Congressional Arbitration Board's award; rather, the firemen were told that they could get their jobs back only through the procedures of the Railway Labor Act. Of course, the Court's action simply places the diesel dispute back in its usual pattern of turmoil, confusion, and frustration. It is likely that the Congress of the United States ultimately will have to establish a more permanent compulsory arbitration law in order to achieve a final solution to the diesel firemen problem.

The future of the once proud and important craft of locomotive fireman is bleak; the future of the fireman's union is even bleaker. One thing is currently clear in the diesel dispute, a controversy that has seen very little clarity throughout its thirty-year history. If the Brotherhood of Locomotive Firemen and Enginemen can survive, despite the odds against it, it might be possible "to conclude that labor unions are immortal, possessing a life almost independent of the usefulness of the crafts they represent."  

_140_ Ibid. For references on the provisions of the Railway Labor Act, see footnote 26, Chapter III, of this study.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

Review of the Scope and Methods of the Study

This study seeks to examine the management-labor relations problems created by dieselization of railroads in the United States. The material presented in the study is confined to a historical description and analysis of the technical nature of dieselization and related personnel problems. The conversion from steam to diesel locomotives provided the basis for this investigation of the man-machine problems associated with major technological change in a heavily capitalized industry. The reactions of management and labor to these problems are analyzed in order to reveal their particular patterns of behavior during the technological change process.

The study primarily examines the impact of dieselization upon engine crew personnel. The impact of dieselization upon train crew employees is given secondary consideration. Limited attention also is directed to the effects of dieselization upon locomotive maintenance specialists. More specifically, the diesel locomotive crew dispute receives the major emphasis in this study. The arguments of management and labor throughout the dispute are analyzed and evaluated. Not only are the obvious and superficial aspects of the diesel crew problem
presented, but, in addition, the more subtle and lesser known issues of this controversy also are discussed in detail. No attempt is made within the study to investigate managerial or functional operating problems resulting from dieselization, unless these problems involve personnel management issues or facilitate the understanding of such issues. Although dieselization appears to have had certain significant effects upon the total political, economic and social system of the nation, this study makes no specific effort to examine these aspects of the dieselization process.

A major portion of the analysis within this study is based upon the author's observation of steam and diesel locomotives operating in yards and on main-lines. Locomotive crew duties and technical features were studied from trackside, from the control cabs of simulated and "in-service" power units, and from the inspection pits of locomotive maintenance facilities. In addition, railroad technical manuals, transportation texts and periodicals, engine crew employees, and locomotive maintenance specialists were consulted in regard to specific technical problems of locomotive operation.

Formal interviews and questionnaires were not used to collect data on operative employee views of dieselization, because of the sensitive nature of the subject. However, seventy-three engine and train crew members were interviewed informally by the author on board trains and in railroad facilities. The information gained through these interviews facilitated an understanding of the operative employee's position in the dieselization process. A limited number of formal interviews were conducted with railroad executives, as a means of gaining
information on general railroad dieselization policies and procedures. Throughout the research for this study, railroad supervisory and clerical personnel rendered aid to the author in the interpretation of dieselization technical data.

Transcripts of testimony and statements of recommendations, awards, and agreements resulting from various diesel dispute investigating boards provided a basis for analyzing the arguments of management and labor in the diesel dispute. Labor textbooks and railroad file materials also were used in this regard. Newspaper and periodical articles provided a means of gaining immediate information on current developments in the diesel controversy.

Summary of Findings and Conclusions

On the basis of the research for this study, the following findings and conclusions appear to be justifiable:

1. The displacement of the steam engine by diesel power caused significant railroad employee resentment of the diesel locomotive.

The captivating steam engine always had been a uniting and morale rallying force for railroad personnel. The diesel locomotive, because of its lack of mechanical and historical glamour, could not capture the affection, respect, or fascination of those who worked with it. Thus the diesel was resented by a considerable number of railroad employees, merely because it displaced the beloved steam engine.

2. The development of diesel motive power created major job security problems for engine crewmen, train crewmen, and locomotive maintenance specialists.
The introduction of diesel power particularly jeopardized the basic existence of locomotive firemen positions. However, the train-cutting multiple-unit control feature of diesel locomotives reduced the total job opportunities for all engine and train crew personnel. Dieselization had a dual job security impact upon steam locomotive maintenance specialists. First, as a result of the diesel locomotive's ability to operate with considerably less maintenance than the steam engine required, dieselization reduced the size of locomotive maintenance shop work forces. Second, the diesel conversion caused a shift in locomotive shop crew crafts from boilermakers and pipefitters to higher skilled machinists and electricians.

3. The technological evolution of railroad locomotives has caused major management-labor controversies over engine and train crew wage schedules.

The development of faster and more powerful locomotives, particularly multiple-unit diesels, caused a steady increase in the lengths of trains. Longer trains placed greater skill requirements, responsibilities, and workloads upon engine and train crews. Wage adjustments for operating crews have tended to lag behind locomotive technological advancements, thus causing serious management-labor pay schedule disputes.

4. Multiple-unit diesel locomotives caused slack action shock to become a major safety problem for freight train crewmen.

The virtually unlimited power capability of multiple-unit diesel locomotives permitted freight trains of such extensive length that rear-end cars were subjected to a high degree of coupler-drawbar originated slack action shock. Since the rear-end brakeman and conductor normally have occupied the final car of a freight train (caboose), they constantly
have been faced with the hazards of slack shock. Passenger train crews
generally have not been subjected to slack shock, because of the limited
length of most passenger trains.

5. The safe-efficient operation of diesel-powered locomotives
in all types of engine service (passenger, freight, and
yard) generally has required the presence of two men in the
locomotive control cab.

Even with automatic train control, automatic machinery alarms,
automatic signal detection, and the dead man's control, the passenger
diesel engineer has continued to need an assistant aboard for right-of-
way, signal, and train observation purposes. In high-speed passenger
service, the diesel engineer could not be expected to operate the train
and simultaneously maintain an effective lookout ahead and behind,
without the help of an assistant. In addition, even with major en route
maintenance virtually unnecessary on modern diesel locomotives, a need
has remained for the engineer's assistant to perform very minor en route
mechanical repairs such as fuse-changing and circuit breaker-resetting.
Whether the second man in the cab is designated as a fireman or a helper
is of practical significance only in inter-union jurisdictional affairs.

Right-of-way, signal, and train observation duties, along with
minor en route maintenance tasks, have continued to dictate the assign-
ment of a second man to the freight diesel control cab. Since a head-end
brakeman capable of performing these tasks, normally has been assigned
to the freight diesel cab, the presence of a fireman in the control cab
has not been required for any functional reason. In fact, three men in
the freight diesel control cab (engineer, fireman, and head-end brakeman)
have tended to create dangerous congestion and confusion in the cab.
Although dual control diesels and electronic signaling and communications devices have been utilized effectively in the complex operations of modern railway yards, a requirement for a second man in the yard diesel control cab has remained. The second man in the yard diesel cab has been needed to observe right-of-way, switching signals, and coupling operations from the left side of the train, particularly in the cases of a yard engine pushing cars or traveling on a left-hand curve. Yard crew brakemen and conductors frequently have not been available for such duty in the yard diesel's control cab, because of their switching responsibilities on the ground.

6. The introduction of electric motive power created many of the same personnel problems attributed to dieselization, but not in as severe a form.

As a result of technical similarities between the electric locomotive and the diesel (no fire to maintain, traction motor operation, multiple-unit control capability, infrequent en route maintenance requirements), dieselization and electrification caused many of the same types of personnel problems. However, the personnel problems resulting from the use of electric motive power never have become very critical or very prominent, primarily because of the limited scope of railroad electrification in the United States.

7. Dieselization created serious status problems for engine crewmen.

The efforts of the railroads to prove that firemen were unnecessary in dieselized freight and yard service resulted in public statements and actions by the carriers proclaiming the simplicity of diesel locomotive operation. Such endeavors by the railroads tended to reduce the
job status and self-respect of both diesel firemen and diesel engineers. Even without managerial intervention, however, dieselization generated a status and work relationship dilemma for diesel firemen. The fact that diesel firemen obviously had little or no work to perform while drawing relatively high pay created resentment and jealousy among fellow railroad employees.

8. Throughout the diesel dispute, the involved railway labor unions generally have acted with aggressiveness and foresight, although their arguments were often functionally unjustifiable.

The Brotherhood of Locomotive Firemen and Enginemen, the railway labor union with the most at stake in the diesel conversion, particularly has displayed foresight in its diesel dispute demands. The firemen's organization apparently attempted to capitalize upon the lack of foresight exhibited by railroad management in its handling of the diesel dispute. The firemen sought to establish favorable work rule precedents while the issues involved were relatively insignificant; then they could rely on the powerful force of railroad tradition to protect their interests in the future. This was the strategy which enabled the firemen's union to place firemen on all types of diesel locomotives, even though a functional need for diesel firemen could not be justified.

During the course of the diesel dispute, the Brotherhood of Locomotive Engineers has sought to protect its members from the job-cutting effects of multiple-unit diesels by demanding the assignment of assistant engineers to all multiple-unit diesel locomotives. The militant efforts of the engineers' organization to secure assistant engineer positions on multiple-unit diesels never have been successful,
primarily because of the lack of a functional need for such crewmen. Both the engineers' and firemen's unions have endeavored to ensure adequate graduated pay rates for engine crews operating lengthy multiple-unit diesel-powered trains.

The labor organizations of the brakemen have tried to protect their members from the job-cutting effects of multiple-unit diesels by demanding the preservation and further enactment of state full-crew legislation. The brakemen have been only moderately successful in this action. The unions of both the brakemen and conductors have made a major effort to gain graduated rates of pay for their members serving on lengthy multiple-unit diesel-powered trains.

The locomotive shop craft unions have been the least active of the railway labor organizations involved in the diesel dispute. This condition probably has resulted from the major union internal adjustments required by the shift in membership composition from steam engine crafts to diesel specialties.

9. Dieselization created a severe inter-union jurisdictional war between the Brotherhood of Locomotive Firemen and Enginemen and the Brotherhood of Locomotive Engineers.

Although the powerful engineers' and firemen's unions previously had clashed over work rules and representation rights, the dieselization process caused an irreparable split between the two labor organizations. The Brotherhood of Locomotive Engineers clashed with the Brotherhood of Locomotive Firemen over the assignment of a fireman to the diesel control cab. The engineers' organization, without success, essentially has tried to replace diesel firemen with assistant engineers. The two unions presently are engaged in a bitter struggle over engine crew
representation rights, with the Brotherhood of Locomotive Engineers supporting the railroad position in the diesel firemen dispute. With diesel firemen jobs gradually being eliminated, and generally lacking the support of other railway labor unions in the diesel crew dispute, the Brotherhood of Locomotive Firemen seems to be approaching extinction. It appears that only a merger with another railway labor organization can renew the strength of the once powerful firemen's union.

10. Railroad management ineffectively prepared for the personnel problems created by dieselization, and consequently failed to provide the dynamic leadership required for efficient utilization of diesel motive power.

It appears that in the diesel conversion the carriers ineffectively planned the handling of even such standard technological change personnel problem areas as job security, job satisfaction, job status, job skills, and job habits. The carriers certainly seemed to give no consideration to the unusual personnel problem of dieselization involving sentimental and aesthetic attachment to the displaced steam engine. Until the middle 1950's, the railroads' diesel dispute strategy seemed to be built around a defensive-delaying action. Expediency for the moment, without thought of future implications, appeared to be the carriers' underlying philosophy in handling the immediate problem issues of the diesel dispute. This condition was particularly obvious in the railroads' conduct during early diesel crew negotiations, wherein they agreed to place firemen on the few diesel power units in operation. The lack of initiative by the carriers in the early years of the diesel dispute allowed the railroad unions, especially the firemen's organization, to usurp managerial prerogatives in regard to engine and train
crew manning. When the carriers suddenly decided in the 1950's to become aggressive in the diesel dispute and assert the right to determine engine and train crew composition, railway labor obviously became vehement in its opposition. It should be clear that dynamic personnel problems resulting from technological change, require dynamic managerial action, right from the inception of the change.

11. The early diesel crew agreements and investigating board recommendations, in conjunction with the force of railroad tradition, intensified and complicated the diesel crew dispute.

As a result of railway labor relations tradition, a railway labor agreement remains in effect until deliberately changed by the parties involved. As a result of this indefinite time period coverage of established railway labor agreements, any party has been able to block repeal or change of the agreement simply by refusing to renegotiate the pertinent issues. This feature of railroad labor relations, in association with the strength of railroad engine crew traditions, made it extremely difficult to change early diesel crew agreements requiring the assignment of firemen to diesel motive power. Except for their immediate strike threat elimination value, the early diesel agreements and investigating board recommendations actually hindered the ultimate solution of the diesel crew dispute. This condition resulted not only from the difficulty of changing previous precedent setting agreements, but also from the nebulous wording of these agreements and pertinent investigating board recommendations; such nebulous wording allowed supposedly settled issues to be reopened through legal interpretation. Later diesel dispute investigative and arbitration boards
(Emergency Board Seventy, Arbitration Board 140, Presidential Railroad Commission, and Congressional Arbitration Board) recognized this problem. While attempting to interpret earlier agreements and board reports in a rigid manner, the previously mentioned boards ensured that their own findings were stated as realistically and precisely as possible. These later boards consequently have played a major role in resolving the diesel dispute complicated by their predecessors.

Survey of Recommendations

On the basis of the findings of this study, the following recommendations are made:

1. Future railway labor agreements should be established to cover a specified period of time, so that work rules based on obsolete technology will no longer impede the efficient utilization of railway technological advancements.

2. For safety-efficiency reasons, two men, an engineer and an assistant (regardless of title), should be present at all times in the control cab of a diesel locomotive operating in yard or main-line passenger and freight service.

3. On lengthy multiple-unit diesel-powered freight trains, the head-end brakeman should be assigned to the control cab of the rear diesel unit for more effective observation of the train's operating condition.

4. On lengthy multiple-unit diesel-powered freight trains, brakemen should be assigned to cabin cars at the rear and middle of the train for more effective observation of the train's operating condition.

5. In the event that the diesel firemen problem is not resolved immediately through carrier-union negotiations, the Congress of the United States should require permanent compulsory arbitration of the issues involved.

6. In planning for future technological changes in the railroad industry, management should consider the possibility of employee technological change resistance originating from sentimental and aesthetic attachment to the obsolete machinery.
7. The Brotherhood of Locomotive Firemen and Enginemen, being confronted with possible extinction, should consider merging with the relatively friendly and powerful Brotherhood of Railway Trainmen rather than with its bitter rival, the Brotherhood of Locomotive Engineers.

8. The following subjects which are directly related to this study, but generally beyond its scope, should receive further investigation:

   - The development of state full-crew laws and their impact upon the nation's railroad system.
   - The development of engine and train crew wage schedules.
   - The effects of compulsory arbitration upon collective bargaining in the railroad industry.
   - The history of the Canadian diesel crew dispute.
   - The history of inter-union relations in the railroad industry.
TABLE 1.—Percentage of Total Traffic Performed by Steam and Diesel-Powered Locomotives During Conversion Period

<table>
<thead>
<tr>
<th>Year</th>
<th>Freight Service (Gross Ton-Miles)²</th>
<th>Passenger Service (Car-Miles)³</th>
<th>Yard Service (Engine-Hours)⁴</th>
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<td>Diesel</td>
<td>Steam</td>
</tr>
<tr>
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<tr>
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<td>85.66</td>
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<tr>
<td>Year</td>
<td>Freight Service (Gross Ton-Miles)</td>
<td>Passenger Service (Car-Miles)</td>
<td>Yard Service (Engine-Hours)</td>
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<td>97.36</td>
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*a A ton-mile is the transportation of one ton of freight for one mile.

*b A car-mile is the transportation of one car for one mile.

*c Based on total number of hours of engine operation.
### TABLE 2.--Locomotives in Service During Conversion Period

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<th>Diesel Electric Units</th>
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<td>537</td>
<td>28</td>
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<tr>
<td>1931-35 Av</td>
<td>49,998</td>
<td>745</td>
<td>89</td>
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<tr>
<td>1936-40 Av</td>
<td>42,316</td>
<td>833</td>
<td>396</td>
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<tr>
<td>1941-45 Av</td>
<td>39,475</td>
<td>857</td>
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<td>1946-50 Av</td>
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<td>25,640</td>
<td>788</td>
<td>14,047</td>
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<tr>
<td>1951</td>
<td>21,747</td>
<td>780</td>
<td>17,493</td>
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<tr>
<td>1952</td>
<td>16,078</td>
<td>756</td>
<td>20,492</td>
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<tr>
<td>1953</td>
<td>11,787</td>
<td>699</td>
<td>22,503</td>
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<tr>
<td>1954</td>
<td>8,650</td>
<td>656</td>
<td>23,531</td>
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<tr>
<td>1955</td>
<td>5,982</td>
<td>627</td>
<td>24,786</td>
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<tr>
<td>1956</td>
<td>3,714</td>
<td>606</td>
<td>26,081</td>
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<tr>
<td>1957</td>
<td>2,447</td>
<td>585</td>
<td>27,186</td>
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<tr>
<td>1958</td>
<td>1,350</td>
<td>556</td>
<td>27,575</td>
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<tr>
<td>1959</td>
<td>754</td>
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<tr>
<td>1960</td>
<td>261</td>
<td>492</td>
<td>28,278</td>
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<td>1961</td>
<td>112</td>
<td>478</td>
<td>28,169</td>
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<tr>
<td>1962</td>
<td>51</td>
<td>434</td>
<td>28,104</td>
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<td>1963</td>
<td>36</td>
<td>429</td>
<td>27,951</td>
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Source: *Yearbook of Railroad Information, p. 8.*
APPENDIX B
TABLE 3.—Summary of Steam-Diesel Power Preferences of Seventy-Three Selected Engine and Train Crewmen

<table>
<thead>
<tr>
<th>Crew Position</th>
<th>Prefer Diesel, Like Steam</th>
<th>Prefer Diesel, Dislike Steam</th>
<th>Prefer Steam, Like Diesel</th>
<th>Prefer Steam, Dislike Diesel</th>
<th>No Steam Experience, Like Diesel</th>
<th>No Steam Experience, Dislike Diesel</th>
<th>Total</th>
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<tr>
<td>Engineers</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>17</td>
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<tr>
<td>Firemen</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>7</td>
<td>3</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Head-End Brakemen</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Engine Crewmen Total</td>
<td>11</td>
<td>4</td>
<td>0</td>
<td>14</td>
<td>4</td>
<td>0</td>
<td>33</td>
</tr>
<tr>
<td>Train Brakemen</td>
<td>14</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>24</td>
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<tr>
<td>Conductors</td>
<td>15</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Train Crewmen Total</td>
<td>29</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>40</td>
</tr>
<tr>
<td>Engine and Train Crewmen Total</td>
<td>40</td>
<td>7</td>
<td>0</td>
<td>14</td>
<td>12</td>
<td>0</td>
<td>73</td>
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</table>

CHART 1.--Summary of Procedures Under the Railway Labor Act for the Handling of Major Railway Labor Disputes

Definition of a Major Railway Labor Dispute

A dispute involving change in agreements affecting rates of pay, work rules, and work conditions.

Initial Step

Section six of the Railway Labor Act requires at least thirty days written notice from the parties concerned of an intended change in agreements. The time and place for the beginning of a conference between the parties shall be agreed upon within ten days after receipt of such notice, and the conference shall be commenced within thirty days from receipt of the notice.

Negotiations

Negotiations will continue until an agreement is reached or a stalemate occurs; the negotiations may continue indefinitely.

Breakdown in Negotiations

Upon a breakdown in negotiations, either party may invoke the services of the National Mediation Board.

Failure of Mediation

If the mediators cannot bring the parties to an agreement, the Mediation Board will endeavor to induce the parties to submit the controversy to arbitration. The parties, however, may refuse arbitration. If arbitration is accepted, the award of the board of arbitration is final and binding upon the parties. The parties must maintain the status quo for a thirty day period following advice from the Mediation Board that mediatory efforts have failed. At the end of the thirty day period, a strike may be called unless an emergency board has been created.

Emergency Board

If in the judgment of the Mediation Board, an unsettled dispute substantially threatens to interrupt interstate commerce so as to deprive any section of the nation of essential transportation service, the Mediation Board shall so notify the President of
the United States. In turn, the President at his discretion may create a board to investigate and report on the dispute. Upon creation of the emergency board, and for thirty days after the board has made its report to the President, no change, except by agreement, will be made by the parties in the conditions out of which the dispute arose. The emergency board has thirty days to make its report, although this time may be extended by agreement as approved by the President. During the course of its investigation, the emergency board holds hearings and, accordingly, makes recommendations on the issues involved. The final report of the emergency board is not binding upon either party. If any of the parties concerned refuse to accept the recommendations of the emergency board, a strike may be called thirty days after presentation of the emergency board's report to the President. There is no Railway Labor Act machinery established to handle major railway labor disputes beyond the report of the emergency board. Settlement thereafter only may be accomplished by agreements reached through collective bargaining procedures, or through government sponsored compulsory arbitration.

CHART 2.—A Categorical Presentation of Major Events in the Diesel Crew Dispute

<table>
<thead>
<tr>
<th>Year</th>
<th>Technological Changes</th>
<th>Investigative Emergency Boards</th>
<th>Arbitration Boards</th>
<th>Labor Agreements</th>
<th>Court Decisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1875</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>1891</td>
<td>Introduction of the electric locomotive</td>
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<tr>
<td>1897</td>
<td>Invention of the diesel engine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1898</td>
<td>Introduction of the gas-electric rail car</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>1923</td>
<td>Introduction of the diesel-electric locomotive (yard)</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>1932</td>
<td>Development of the pottering lightweight diesel engine.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>Technological Changes</td>
<td>Investigative Emergency Boards</td>
<td>Arbitration Boards</td>
<td>Labor Agreements</td>
<td>Court Decisions</td>
</tr>
<tr>
<td>------</td>
<td>----------------------</td>
<td>--------------------------------</td>
<td>-------------------</td>
<td>-----------------</td>
<td>-----------------</td>
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<tr>
<td>1934</td>
<td>Introduction of the internal combustion rail car streamliner</td>
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<tr>
<td>1935</td>
<td>Introduction of the diesel-electric passenger locomotive</td>
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<td></td>
<td>Rail Car Streamliner Firemen's Agreement</td>
<td></td>
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<tr>
<td>1937</td>
<td></td>
<td></td>
<td></td>
<td>Firemen's National Diesel Agreement of 1937</td>
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<tr>
<td>1940</td>
<td>Introduction of the diesel-electric freight locomotive</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>1943</td>
<td></td>
<td>The 1943 Diesel Emergency Board</td>
<td></td>
<td>The 1943 Regional Diesel Agreements</td>
<td></td>
</tr>
<tr>
<td>1949</td>
<td></td>
<td>The 1949 Diesel Emergency Boards Sixty-Eight and Seventy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>Technological Changes</td>
<td>Investigative Emergency Boards</td>
<td>Arbitration Boards</td>
<td>Labor Agreements</td>
<td>Court Decisions</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------</td>
<td>-------------------------------</td>
<td>--------------------</td>
<td>------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>1950</td>
<td>Introduction of the general purpose diesel-electric locomotive (Geep)</td>
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<td></td>
<td>The 1950 Firemen's National Diesel Agreement</td>
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<td>1954</td>
<td>1954 Diesel Arbitration Board</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>1960</td>
<td>The Presidential Railroad Commission</td>
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<td>1963</td>
<td>The Congressional Compulsory Arbitration Board</td>
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<td></td>
<td></td>
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<tr>
<td>1964</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Supreme Court review of the constitutional validity and validity of the Congressional Arbitration Board's ruling</td>
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</table>
CHART 3.—A Chronological Annotated Outline of Major Events in the Diesel Crew Dispute

1875 - The Engineers' Agreement of 1875

Established the precedent for not using termination dates in railway labor agreements.

1891 - Introduction of the Electric Locomotive

The first significant use of non-steam motive power on railroads of the United States.

1897 - Invention of the Diesel Engine

An invention of the French-born mechanical engineer, Dr. Rudolph Diesel.

1898 - Introduction of the Gas-Electric Rail Car

The first use of an internal combustion railway motive power unit generating its own power, without placing fuel in a firebox.

1923 - Introduction of the Diesel-Electric Locomotive

The first successful application of the diesel engine to an American railway locomotive (yard locomotive).

1932 - Development of a Lightweight High-Power Diesel Engine

Charles Kettering's lightweight diesel engine designed for naval submarine use permitted the development of larger, more powerful railway diesel motive power.

1934 - Introduction of the Internal Combustion Rail Car Streamliners

The first application of diesel power to passenger service.

1935 - Initial Demand by the Firemen's Organization for the Assignment of Firemen to the Streamlined Rail Car Trains

The first major demand by the firemen that one of their number be assigned to internal combustion motive power units.

1935 - Introduction of the Diesel-Electric Passenger Locomotive

The first use of an independent diesel locomotive capable of powering a train of conventional, non-articulated passenger cars.
1935 - Capitulation by the Railroads to the Demand for Streamlined Rail Car Train Firemen

The railroads submitted to the demand for rail car train firemen, and thus established a precedent for non-steam motive power firemen positions.

1936 - Initial Blanket Demand by the Firemen's Organization for the Assignment of Firemen to All Types of Railroad Motive Power

The first time that the firemen's organization had presented a blanket demand for the assignment of firemen to all forms of motive power, including electric and internal combustion power units.

1937 - Firemen's National Diesel Agreement of 1937

Established a firm requirement for the assignment of firemen to heavy electric and diesel-electric locomotives, even though a functional need for such non-steam firemen could not be proven.

1940 - Introduction of the Diesel-Electric Freight Locomotive

The first use of an independent diesel locomotive capable of powering a train of freight cars.

1943 - The 1943 Diesel Emergency Board

Recommended the implementation of the watching rule requiring the presence of two men in the cab of certain classes of high-speed passenger trains, implied that firemen had no exclusive rights to diesel engine room work, and rejected the firemen's demand for the assignment of assistant firemen to all multiple-unit diesel locomotives.

1943 - The 1943 Regional Diesel Agreements

Formalized and implemented the watching rule, and required that every non-steam road engine, regardless of weight, have a fireman aboard.

1949 - The 1949 Diesel Emergency Board Number Sixty-Eight

Rejected the Brotherhood of Locomotive Engineers' demand for the assignment of assistant engineers to single and multiple-unit diesel locomotives.
CHART 3.——Continued

1949 — The 1949 Diesel Emergency Board Number Seventy

Implied that management had the sole responsibility for determining engine crew composition, rejected the firemen's demand for the assignment of assistant firemen to all multiple-unit diesel locomotives, and repudiated the firemen's claim of exclusive rights to diesel engine room work.

1950 — Introduction of the General Purpose Diesel Locomotive

The Geep could be used in all types of engine service and was identified by its lack of an enclosed engine room, a condition which virtually precluded any type of en route engine maintenance.

1950 — The 1950 Firemen's National Diesel Agreement

 Ended the 1950 firemen's strike over the assistant diesel firemen issue, established a requirement for firemen on lightweight diesel yard engines, and submitted certain unresolved watching rule and en route diesel maintenance issues to arbitration.

1954 — The 1954 Diesel Arbitration Board

Affirmed existing interpretations and applications of the watching rule, repudiated the firemen's claim of exclusive locomotive power production rights, and formally recognized certain managerial prerogatives in locomotive crew manning.

1960 — The Presidential Railroad Commission

Recommended the gradual elimination of virtually all diesel freight and yard firemen positions.

1963 — The Congressional Compulsory Arbitration Board

An arbitration board appointed in accordance with the two-year Congressional Compulsory Arbitration Law, ruled that 90 per cent of all diesel freight and yard firemen positions gradually could be eliminated.

1964 — Supreme Court Review of the Constitutionality and Validity of the Congressional Arbitration Board's Ruling

The Supreme Court of the United States rejected an appeal by the firemen's union challenging both the constitutionality of the Congressional Compulsory Arbitration Law and the validity of the Compulsory Arbitration Board's ruling.
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Interview with personnel supervisor. August 20, 1962.


I, Philip Adler, Jr., was born in Cincinnati, Ohio, August 29, 1930. I received my secondary education at Walnut Hills High School in that city. My undergraduate training was obtained from The Ohio State University, which granted me the Bachelor of Science degree in 1952. I received the Master of Business Administration degree from the University of Miami (Florida) in 1957. I served as an Instructor in Industrial Management at the University of Miami from 1956 until 1959. I returned to The Ohio State University in 1959, and in 1961 completed most of the requirements for the Doctor of Philosophy degree, specializing in the field of management. During the period of 1959 to 1961 I held the position of Assistant Instructor in Business Organization at The Ohio State University. From 1962 until the present I have held the position of Assistant Professor of Industrial Management at the Georgia Institute of Technology.