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The Adjustment of the Australian Railways Unions to Dieselisation, 1955 - 1960

A thesis submitted in partial satisfaction of the requirements for the degree Master of Arts in Economics

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ABSTRACT OF THE THESIS

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This thesis is a study of how the Australian Railways Unions adjusted to the partial dieselisation of the New South Wales Government Railways during the period 1955 - 1960.

The New South Wales Government Railways is the largest public or private industrial organization in the Commonwealth of Australia. It is administered by a Commissioner of Railways who is responsible to the Minister of Transport. The Railways employed, on an average, 52,000

workers during the years 1955-1960. All permanent members of the Department were required to be union members. Industrial disputes are settled by the traditional Australian method of compulsory arbitration.

During World War II and immediately after the Department of Railways was beset by labor and capital shortages which required many cancellations. Also during these years intermodal competition, particularly the more flexible private trucking operation, increased greatly. The New South Wales Government attempted to protect its investment via restrictive licensing practices, etc.; however, in 1954 these measures were largely declared unconstitutional. During 1955, over one-third of the Department's permanent track was wiped away by severe flooding.

The cumulative effect of all these factors led the Department to seek a method by which the New South Wales Government Railways could be made competitive. They seized upon the most immediate solution - dieselisation. Between 1955 and 1960, approximately 20% of the line was dieselized.

The introduction of diesels has a two-fold effect upon the demand for labor: (1) It decreases the aggregate demand for workers, and; (2) It reduces the skills needed to perform the job operations.

The interaction between labor and management, regarding the effects of dieselisation and related changes is

studied in some depth. In this study particular attention is given to the fact that all such interactions take place within the constraints of an overall system of industrial compulsion.

CHAPTER I

INTRODUCTION TO STUDY

Outline

The causes and effects of partial dieselization of the New South Wales Government Railways upon labor relations within that industry are investigated in this thesis. It is primarily a study of the events that caused the Railways to dieselize and of the adjustment of the unions, management, and the arbitration system to this change. This study covers the period 1955-1960, for while diesels have operated in New South Wales since 1937, it was during these years that approximately one-fifth of the line was dieselized.

Information for this study utilized the following source material: (1) direct questionnaires to labor, management, members of the Commonwealth Conciliation and Arbitration Commission, and associates of the New South Wales Industrial Tribunals; (2) empirical research into such primary source materials as State and Federal Awards, Industrial Court Inquiries, union documents, the contemporary New South Wales Press, Railway journals, and official government publications.

The Problem Stated

Diesel locomotives have changed the industrial environment from that occurring when steam locomotion is used.

The job content associated with the operation of a locomotive has been drastically reshaped by the use of diesel power. These effects have manifested themselves in: (1) decreasing the aggregate demand for locomotive crews by making the coal tendering position obsolete and making it possible for one crew member to operate multiple engine hook-ups; (2) reducing the skills needed to operate a locomotive, and; (3) obviating many of the logistic operations needed in the servicing of steam locomotives, such as elimination of water pumpers and intermediate depot maintenance men.[1] Such changes, striking as they do at job security and consequently the source of union strength, further emphasize areas of disagreement between labor and management.

The potential effect of dieselization upon the demand for labor is more clearly seen when it is realized that a 1957 estimate suggested that approximately 350 diesel electric locomotives could efficiently replace the then 1200 steam locomotives and all of their support facilities.[2]

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[1]New South Wales Industrial Commission of: Inquiry into Recent Mechanization and Technological Changes in Industry and Other Matters, Coram Richards J. (Industrial Court Evidence, pp. 877-1603, 19th October to 7th December) Sydney, 1959.

[2]Report by Ebasco Services Incorporated, A Study of Department of Railways and Department of Government Transport, A.H.Pettifer, Government Printer, Sydney, 1957, p.64.

The Problem Analysed

Steam locomotives utilize the energy of superheated steam. The energy supplied by the burning fuel, either oil or coal, is transferred to the water surrounding the fire box, thereby transforming the water into superheated steam. This steam provides pressure in the cylinders to drive the pistons, which in turn drive the wheels via the driving rods. Diesel locomotives have approximately a 3 to 1 input-output efficiency ratio over steam locomotives. Further, a steam locomotive must carry a large amount of fuel and water to generate traction. The operation of this type locomotive requires that the energy inputs be continually replenished at tender depots for both coal and water. In addition, the waters of New South Wales contain a number of incrusting elements, such as silica, iron carbonate, alumina, calcium carbonate, manganese carbonate, and manganese sulphate, which, after heating, form a permanent scale on the insides of the steam boiler. This makes it necessary for the steam locomotive to undergo frequent and extensive overhauls.[3]

Diesel locomotives are of two types: (1) pure diesels and (2) diesel electric locomotives. Pure diesels are

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[3]Industrial Commission, Evidence by H.V.Heard, Engineer, Department of Railways, op. cit., pp. 1254-1266, particularly p. 64.

those locomotives in which the power is transmitted directly from the diesel plant, via a system of gears, to the driving wheels. In diesel electrics the diesel plant is used to supply energy to an electric generator. This in turn operates an electric motor which supplies energy directly to the driving wheels. More speed or power is supplied by increasing the energy available to the generator, which in turn increases the speed or power of the electric motor. This method eliminates gears, which are considered inefficient, especially in the larger vehicles.[4]

In the New South Wales Government Railways, steam locomotives and their parts were rebuilt almost entirely within the Department's own workshops. Diesel parts are generally supplied by the manufacturers. Many diesel manufacturers would prefer that rail employees retained on the engine make no effort to adjust the mechanism. Boilermakers are not required for diesel maintenance or repair operations, however, the need for electricians and diesel mechanics is greatly increased.[5]

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[4] Ibid, p. 1051.

[5] Ibid, Dr. Lloyd Ross, Secretary, New South Wales Railways Union, p. 1046.

On a steam engine a fireman is absolutely necessary, for he fuels the fire and assists the driver in locating signals. In contrast, a diesel operates much like an automobile requiring only a driver. Another major operating advantage of diesel engines is that they can be joined together in tandem and directed from one cab which eliminates the need for a crew in each cab as is the case with steam locomotives.

Conditions within the diesel cab are considerably more desirable for the crew than those within the cab of a steam locomotive. Steam locomotives are hot and dusty, and the firemen are forced to continually shovel coal from the trailing tender to the fire-bed. On the Sydney to New Castle run, for example, five tons of coal would be needed in a little over four hours. Considerable skill is needed to lay the coal correctly in the fire bed. Diesels have hot plates and toilets. Neither of these amenities were provided on the Department's steam locomotives.[6]

In conclusion diesels are more powerful and are thermodynamically more efficient than steam engines. Other economies are wrought by reducing the need for firemen, multiple crewing on tandems, intermediate watering and coaling facilities and their staffs, along with the major country support installations needed for trunk line travel.

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[6]Interview with New South Wales Government Railways Industrial Officer, C.V.May, October 5, 1962.

Summation

In sum dieselization results in:

(1) An average increase in productivity per employee.

(2) An overall reduction in the number of employees.

(3) Relocation of railway staffs, especially those formerly employed at water pumps, small maintenance depots, or division points.

(4) Changes in the skills needed by drivers, maintenance men and other workshop employees.

The above four points only briefly cover the realignment in job structures resulting from the introduction of diesels. The effects go much deeper, affecting many segments of the traditional railway system, all the way from decreasing the demand for coal to disrupting the economies of "rail towns" formerly dependent upon railway installations.

Chart number I-1 is presented to compare the relative efficiencies of the two different type locomotives. The tremendous overall economies derived from using diesels is well illustrated by reference to this chart.

CHART NO. I-1

ECONOMICS OF STEAM AND DIESEL LOCOMOTIVES[7]

1960 Statistics

	DIESELS ("S" Class)	STEAM ("R" Class)
Weight	116 tons	180 tons
Load up	780 tons	365 tons
Bank run (13 miles 1/48)	48 minutes	67 minutes
Maintenance cost per mile	9 d.	52 d.
Fuel/mile	1,33 gallons (23.3 d.)	1 cwt. (81 d.)
Capital cost	120,000	90,000
Mileage	1-1/4 million miles in 7-1/2 years 1-1/4 million miles before major examination	1-1/2 million miles in 28 years

[7]Research Services of Sydney, Economics of Steam and Diesel Locomotives, Sydney, 1960, p. 21. It would be impossible to compare all the different type locomotives; however, this comparison of efficiencies does illustrate the advantage that diesels do have over steam locomotives.