

CANADIAN FREIGHT RATE CASES

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carloads, and that telephone poles and trolley poles (wooden) be also added to said list. As to the second ground of complaint, that the respondent company's rates upon telegraph, telephone and trolley poles are excessive in that they are higher than the rates on ordinary lumber, etc., the Board is not satisfied that this matter of complaint has been fully and sufficiently argued before us. We shall necessarily be called upon to look into and deal with this question when passing upon the general railway tariffs submitted to us, and we will therefore defer at present coming to a decision, or making any order, having reference to the second branch of the complaint before us."

In the matter of the application of the Sutherland-Innes Co. and the Wallaceburg Co. against the increase of rates by the Pere Marquette Rd., the Michigan Central Rd., the Wabash Rd., the G.T.R. and the C.P.R. on cooerage stock from Wallaceburg, Ont., between points in Eastern Canada, and more especially to the increase from Wallaceburg and other western Ontario points to Montreal for local delivery and for export, after reviewing the evidence given, the Commissioners in their judgment said: "Looking at the varying rates which have prevailed from time to time during the period covered by the statement quoted above, and considering (a) the fact that the export of cooerage has materially fallen off since the increased rates have prevailed; (b) the fact that 18 cents is the agreed rate on lumber for local delivery, and the frequent custom of the railways to absorb the terminal charges on export traffic carried to Montreal at local rates; (c) that 18 cents, including terminals, is 1½ cents per 100 lbs. more than the railways once accepted on export traffic, and (d) that 16½ cents, including cartage, has been accepted by the railways on shipments for local consumption; the Board has concluded to order that 16½ cents per 100 lbs. be the maximum rate from points in Western Ontario to Montreal on cooerage stock for local delivery, and 18 cents per 100 lbs. the maximum rate from the same points, including terminals, for export; and that cooerage stock be included at the same rates as common lumber in the mileage tariffs of the railways applying on lumber and other commodities carried at lumber rates. It is not intended by this order that any special rates on lumber lower than the special mileage tariffs, made in competition with water routes or for other exceptional reasons, must necessarily be charged on cooerage stock also."

Power Features C.P.R. Angus Shops, Montreal.

POWER DEMANDS.—The requirements of these works for power include:

Alternating current motors	4,425 h.p.
Direct current motors	343 h.p.
Alternating incandescent lamps	231 h.p.
Alternating current arc lamps	26 h.p.
Alternating current series lamps	60 h.p.

Before finally settling the question of alternating current vs. direct current for the operation of these works, the whole case was carefully considered, and it was finally decided that as far as possible all the demands should be met by alternating current, and only those taken by direct current which it was impossible to place on the alternating current service. Had it not been for the uncertainty regarding the operation of the large cranes by alternating current motors the plant would have been entirely alternating, as it was recognized that in a very few years the direct current would be entirely displaced in favor of alternating, but at the present certain tools and cranes could be better operated by direct current power. The alternating current is developed and distributed at 550

volts, 60 cycles. The direct current power at 250 volts. A central station is established from which power is distributed to the various shops, the motors being driven in groups in most cases, and individually in others.

STEAM REQUIREMENTS.—The steam requirements are as follows—power for operating the central station:

Steam for power	4,225 h.p.
Steam for heating the shops	2,880 h.p.
Steam for miscellaneous uses	200 h.p.
Steam for locomotive boiler testing	317 h.p.

The heating of the shops being done by a fan system, exhaust steam from the power station, in addition to live steam from boilers, is distributed to the various buildings, the former through reducing valves, the latter direct. The testing of locomotive boilers, requiring, as it does, 300 lbs. pressure, necessitated the use of one 300 lb. boiler, which transmits steam to the machine shop, 1,800 ft. distant. The use of superheated steam to 150 degrees was deemed advisable to obtain economy, in view of the fact of the engines running non-condensing against some back pressure.

BOILER HOUSE.—In the boiler house is installed at the present time the following apparatus:

4 150 lb. boilers of	415 h.p. each.
1 300 lb. Babcock & Wilcox boiler	317 h.p.

Additional room allowed for Babcock & Wilcox boilers, 415 h.p. each.

To each boiler is attached a Babcock & Wilcox superheater for 150 degrees. One economizer in two groups, heating surface, 4,500 ft. Two fans and engines for induced draft at ¾ oz. pressure.

At the present time there are installed in boiler house four Babcock & Wilcox forged steel water tube boilers of 415 h.p. nominal capacity each. These boilers are good for a working pressure of 160 lbs. to the square inch. There is also one Babcock & Wilcox boiler of 317 nominal capacity, good for a continuous working pressure of 300 lbs. All of the above boilers are fitted with Babcock & Wilcox patent steam superheaters to give a maximum of 150° Fahr. of superheat. They are also completely equipped with Neemes' patent shear cut shaking grates, manufactured by Babcock & Wilcox (Ltd.) There are also two high pressure fuel economizers, each containing 240 pipes, and equipped with independent engines to operate the scraper mechanism. They are also supplied with removable side panels of steel and asbestos to facilitate inspection. The pumps are of the Northey type, and consist of two 12 in. x 7 in. x 12 in. duplex brass lined pumps for the regular feed, and also two 8 in. x 4 in. x 12 in., of the same pattern and make, for supplying the high pressure boiler.

The induced draft plant consists of two 200 in. fans, each direct connected to a double enclosed vertical navy type engine 8 in. x 5½ in. The fans are connected with the necessary by-pass arrangement and dampers and discharge the gases into a steel stack 8 ft. in diameter, and extending about 70 ft. above the boiler room floor. The speed of the fan engines, and consequently the draft, is controlled by automatic regulating valves placed in the steam line to the fans. The whole of this apparatus was supplied and installed by Babcock & Wilcox (Ltd.). The Neemes grates were installed so that the waste wood and shavings from the planing mill and repair shops can be utilized for fuel. The shavings aggregate about 600 h.p. value in fuel, and are carried to the boiler room by a system of fans and piping, which delivers them into the furnaces above the ordinary fire doors. Coal is distributed on the boiler room floor from cars running alongside the boiler house. Ashes are dropped from the ash pits into small cars running in a tunnel, the buckets of which are hoisted out by an air lift at the end of the power house.

ENGINE ROOM.—In the engine room, divided from the boiler house by a fireproof wall, the following machinery is installed:

3 compound non-condensing engines,	750 h.p.
1 engine,	375 h.p.
The above directly connected to alternating current generators operating at 150 R.P.M.	
2 compound non-condensing engines,	350 h.p., connected to direct current generators.
2,000 ft. compound air compressors,	each 375 h.p.
2 simple exciter engines,	75 h.p.
All of the above apparatus operates at a pressure of 150 lbs., with 150 degrees of superheat.	

It was found inadvisable to condense owing to the necessity for cooling towers, as water was scarce, and to the fact that the exhaust steam would be more valuable in heating the works than through engine economy obtained by condensing. Directly connected to the engines specified above are the following dynamos:

Three 3 phase 60 periods G.E. generators,	550 volts, 500 K.W.
One 3 phase 60 periods G.E. generator,	550 volts, 250 K.W.
Two direct current 125 volt G.E. generators,	250 K.W.
Two D.C. 125 volt exciters,	50 K.W.

The above generators are connected to switchboards through ducts and pits with lead covered cables.

Switchboards consist of 20 panels, subdivided as follows:—alternating current generators, four panels; direct current generators, two panels; exciter, one panel; alternating current feeder panels, 10 panels; totalling panel; series alternating current arc, one panel; one blank panel; two series arc G.E. transformers, each 50 lights.

All of the above apparatus is situated on the main floor, on the ground level. In addition, there is a pump pit, which runs the entire length of the building, 12 ft. wide, in which are placed all the pumps and auxiliary apparatus, as follows:—

2 well pumps, furnishing water to the works,	660 gallons per minute.
2 300 lb. boiler feed pumps,	65 gallons a minute.
2 150 lb. boiler feed pumps,	200 gallons a minute.
2 underwriters' fire pumps,	1,500 gallons a minute.

All of the above pumps are of Northey type, made by the Canada Foundry Co.

1 corrugated tube heater,	1,100 h.p.
2 intercoolers for the compressors.	

In addition, all the exhaust, drip piping and traps are placed in this pit, which is at the same level as the tunnel constructed throughout the works to carry all steam, exhaust and water pipes to the various shops.

PIPING.—All piping is in accordance with the latest modern practice, extra heavy pipe fitting and valves being used on the 150 lb. pressure, and double extra heavy on the 300 lb. lines. Flanges are of steel with the pipe expanded in. Main exhaust pipe runs the entire length of the building, and is of cast iron, with spiral riveted and galvanized free air pipes, with relief valves extending fifteen feet above the roof. All connections from boiler to boiler header, and from header to engines, are made of pipe bends, and all expansions are taken on pipe bends except in two cases, where corrugated expansion joints are used, these being reinforced with steel equalizing straps. All pipe joints are flush, gasketed with copper, and flanged for all sizes above 2 ins. Boiler feed piping is in duplicate, and made of extra heavy galvanized iron. All of the above piping is soft wrought iron, and all valves from 7 ins. upwards are by-passed, except those on the boiler nozzles, where the pressure is equalized on both sides. Connections are made to the live steam piping both from the saturated and superheated nozzles of the boilers, so that any degree of tempering may be obtained if required. A drip loop system returns all clean water drips automatically to the boilers; it is connected to all engines, receivers and high pressure piping. On each engine has been placed a receiver of three times the capacity of the high pressure cylinder, equipped with baffle plates to remove