

The Montreal Market

Montreal as a Refining Centre

Most of Canada's crude oil imports are purchased by the Montreal refineries. The refineries in this area have traditionally relied on foreign sources of crude and the Montreal refining centre has long been the largest market for crude oil in Canada, representing about one-third of the nation's total refining capacity. It has played an important role in meeting the eastern Canadian requirements for petroleum products.

Eastern Canada, for these purposes consisting of Ontario, Quebec and the Maritime Provinces, provides the market for approximately 60 per cent of Canada's demand for petroleum products. Some 15 per cent of the demand in this area has been met in the past from product imports, the remainder being supplied by the refineries of the region. In 1958, two-thirds of the requirements for crude oil were supplied by imported crudes. The remaining one-third came almost entirely from Western Canada, its use being confined to refineries in Ontario.

Tables XXVIII and XXIX illustrate the supply and demand situation in Eastern Canada in 1958 and the relationship of refinery capacity to product demand in Ontario, Quebec and the Atlantic Provinces.

The only refinery in the Atlantic Provinces, aside from a small plant near Moncton, New Brunswick, using local crudes, is the Imperial Oil Limited refinery at Halifax, although in 1959 construction of a refinery was commenced at Saint John, New Brunswick, by Irving Oil Company Limited. The approximate average 1957 imports of crude oil for the Halifax refinery were 40,500 barrels per day. This crude oil came from Venezuela and had an approximate A.P.I. gravity of 30°. This refinery has a capacity of 49,000 barrels per day. The Saint John, New Brunswick, refinery of Irving Oil Company Limited will have a capacity of approximately 40,000 barrels per day.

It is apparent from Tables XXVIII and XXIX that the Montreal refineries, which are the only refineries in the Province of Quebec, use the largest proportion of the crude oil refined in Eastern Canada, amounting in 1958 to over 50 per cent of the total. On the other hand, Quebec accounted for only 37 per cent of the total product demand in Eastern Canada in 1958. A comparison between crude oil consumption and provincial product demand illustrates the importance of Montreal refineries in supplying petroleum

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TABLE XXVIII — PETROLEUM SUPPLY AND DEMAND IN EASTERN CANADA, 1958
(in thousands of barrels per day)

	<i>Ontario</i>	<i>Quebec</i>	<i>Atlantic Provinces</i>
<i>Supply</i>			
Crude production	2	.....	.....
Natural gas liquids production .....	.....	.....	.....
Other materials used .....	.....	.....	.....
Imports—crude	11	234	43
—products	20	24	23
Transfers between areas			
—crude	164	— 3	.....
—products	60	—62	2
New supply	257	193	68
Inventory change	(9)	(7)	(2)
Total supply	266	200	70
<i>Demand</i>			
Domestic demand	265	199	70
Exports—crude .....	.....	.....	.....
—products	1	1	.....
Total demand	266	200	70

Source: Compiled by Commission staff from data supplied by the Dominion Bureau of Statistics. (Preliminary estimate.)

TABLE XXIX — REFINERY CAPACITY AND PETROLEUM PRODUCT DEMAND IN EASTERN CANADA, 1958

<i>Province</i>	<i>Refinery capacity December 31, 1958</i>		<i>Petroleum product demand</i>	
	<i>barrels per day</i>	<i>per cent</i>	<i>barrels per day</i>	<i>per cent</i>
Ontario	228,822	42.1	265,000	49.7
Quebec	264,800	48.8	198,745	37.2
Atlantic Provinces	49,300	9.1	70,082	13.1
Total	542,922	100.0	533,827	100.0

Source: Compiled by Commission staff from data supplied by the Dominion Bureau of Statistics and Department of Mines and Technical Surveys. (Preliminary estimate.)

products to Eastern Canada. In 1958, as indicated by Table XXVIII, Montreal refineries supplied 60,000 barrels of products per day to Ontario and 2,000 barrels per day to the Maritimes. However, with the expansion of the refining industry in the two latter areas, shipments of products from the Province of Quebec will tend to decrease in the future. This is already evidenced by the fact that shipments from this province in 1957 amounted to 74,000 barrels per day.

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Table XXX shows that, with the exception of the period towards the end of World War II, Montreal has been the most important refining centre in Eastern Canada for many years. Chart 12, "Petroleum Refineries in Canada", further illustrates the importance of the Montreal refining centre.

TABLE XXX—PERCENTAGE OF PETROLEUM REFINING CAPACITY
IN EASTERN CANADA BY AREAS, 1939-1958

Province	1939	1945	1950	1955	1957	1958
Ontario	32	45	31	40	40	42
Quebec	46	35	60	55	51	49
Atlantic Provinces	22	20	9	5	9	9
Total	100	100	100	100	100	100

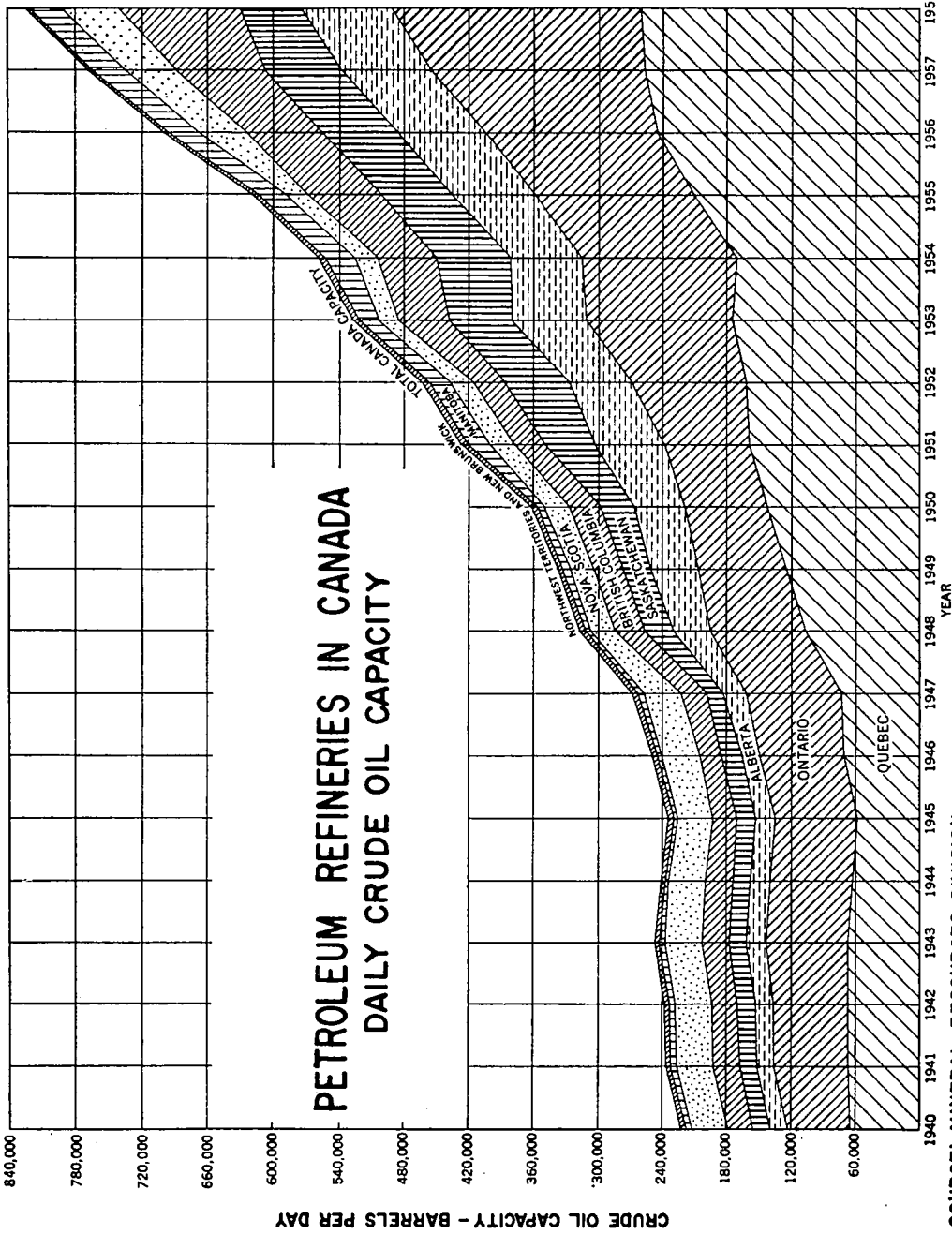
Source: Department of Mines and Technical Surveys.

The recent decline in the relative position of Montreal is due to a rapid expansion of refining in Ontario, as this area has obtained access to Western Canada crudes through the extension of the Interprovincial pipe line system. However, despite this relative decline, the actual refining capacity of the Montreal area is expected to increase by at least 12 per cent in 1960.

The greater concentration in the past of the refining capacity of Eastern Canada in Montreal is a direct result of the accessibility of that area to waterborne foreign crudes, either directly or through the Portland-Montreal pipe line. For this reason Montreal has remained the largest refining centre despite the fact that Ontario has constituted the largest market in Eastern Canada for refined products. Because of the availability of comparatively low-cost crude from a variety of overseas sources, products refined in Montreal could be marketed as far west as the Toronto-Hamilton area in competition with products refined in Ontario from inland crudes originating for the most part in the Mid-Continent area of the United States. In recent years, however, the availability of western Canadian crudes through the extension into Ontario of the Interprovincial pipe line system has resulted in the expansion of Ontario refining capacity at a faster rate of growth than in Quebec. As a result, the Ontario refining industry has supplied an increasing share of a rapidly growing provincial product demand.

There is an appreciable difference in the pattern of product demand between Ontario and Quebec. For example, it will be seen from Table XXXI that, in comparison with Ontario, the demand for gasoline in Quebec is low, whereas the demand for heavy fuel oil is comparatively high. The refining operations of the two provinces have been developed on a complementary basis because of this diversity of demand.

CHART 12



SOURCE: MINERAL RESOURCES DIVISION
DEPT. OF MINES AND TECHNICAL SURVEYS, OTTAWA

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TABLE XXXI — PRODUCTION AND SALES OF PETROLEUM PRODUCTS
IN EASTERN CANADA, 1958
(millions of barrels)

	Refinery Production		Sales (b)		
	Quebec and Maritimes (a)	Ontario	Maritimes	Quebec	Ontario
Motor gasoline	30.27	24.33	6.70	19.03	34.74
Kerosene and stove oil	7.10	3.09	2.85	6.09	4.37
Diesel fuel oil	7.47	4.46	2.85	4.16	4.85
Light fuel oil	16.88	14.27	4.05	13.41	25.39
Heavy fuel oil	22.61	8.47	5.35	15.92	10.12

Notes: (a) Montreal refiners in Quebec account for about 85 per cent of this production, the Maritimes the remainder.

(b) The sales shown are net sales and do not include refinery consumption and losses.

Source: Compiled by Commission staff from data supplied by the Dominion Bureau of Statistics. (Preliminary estimate.)

The refinery expansion which is taking place in Ontario will tend to make Ontario less dependent on Montreal output in the future. Should the pattern of product demand in Eastern Canada change appreciably this might also tend to lessen the traditional dependence of the Ontario market on Montreal refining production. Such a change in product demand might come about if natural gas sales have an appreciable effect on fuel oil sales in Ontario and Quebec. This would reduce the demand for light fuel oils, relative to gasoline demand, and make a light crude of 35° gravity more suitable for refinery operation than a heavier crude. On the other hand, continuing industrial expansion will require increasing quantities of light and heavy fuel oils. It is not possible at this time to determine whether future changes in the pattern of demand will result in an extensive use of lighter gravity crude, such as Alberta crude, in place of the 31° gravity crude now being used in the Montreal refineries.

Table XXXII gives particulars of the refining companies in the Montreal area, including ownership, capacity and sources of crude oil.

The average gravity of the crude oil imported at Montreal in 1957 was 31° A.P.I. This type of crude has been preferred for the Montreal market because of the lower gasoline yield and the higher yields of middle distillates and heavy fuel oil than are customary from the average crude of 34° to 35° A.P.I. gravity produced in Western Canada.

Venezuela has been the main source of supply of crude oil for Montreal. Shipments from that country normally have constituted more than three-quarters of the annual crude oil requirements. Recently, as will be seen from Table XXXIII, there has been an increase in the use of Middle East crudes.

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**TABLE XXXII — REFINERY CAPACITY AND CRUDE OIL IMPORTS
AT MONTREAL, 1957**

<i>Refining Company</i>	<i>Crude oil capacity (barrels per day)</i>	<i>Approximate imports (barrels per day)</i>	<i>Source</i>	<i>A.P.I. Gravity</i>
Imperial Oil Limited	71,800	70,000	Venezuela	31°
Shell Oil Company of Canada Limited	60,000	30,000	Venezuela	30.8°
		30,000	Kuwait	31°
Texaco Canada Limited (formerly McColl-Frontenac Oil Company Limited)	59,000	34,800	Venezuela	31°
		3,000	Trinidad	31°
		19,000	Saudi Arabia	31°
		300	U.S.A.	
The British American Oil Company Limited	45,000	43,000	Venezuela	31°
Canadian Petrofina Limited ...	20,000	16,000	Kuwait	31°
BP Refinery Canada Limited*	30,000			

* Under construction.

Source: From submissions to the Commission.

**TABLE XXXIII — REFINERY CRUDE OIL RECEIPTS AT MONTREAL,
BY SOURCE, 1956-1958**

	<i>1956</i>		<i>1957</i>		<i>1958</i>	
	<i>millions of barrels</i>	<i>per cent</i>	<i>millions of barrels</i>	<i>per cent</i>	<i>millions of barrels</i>	<i>per cent</i>
United States			4.0	4.5	0.1	0.1
Venezuela	66.5	76.3	69.5	78.6	55.1	64.5
Trinidad	1.2	1.4	1.0	1.1	0.2	0.2
Colombia	0.2	0.2				
Iran-Iraq	1.1	1.3	0.3	0.4	0.4	0.5
Kuwait	6.3	7.2	7.5	8.5	17.2	20.1
Saudi Arabia	11.9	13.6	6.1	6.9	12.5	14.6
Total imports	87.2	100.0	88.4	100.0	85.5	100.0

Source: Compiled by Commission staff from data supplied by the Dominion Bureau of Statistics.

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The value of crude oil imported into Quebec for use at Montreal refineries during the period 1956-1958, compared with the value of total crude oil imports into Canada, was as follows:

<i>Year</i>	<i>Quebec Imports</i>	<i>Total Canada Imports</i>
1956	\$223,387,787	\$271,290,793
1957	\$244,894,822	\$305,557,147
1958	\$221,168,099	\$278,541,000

For many years crude oils were imported into Montreal by tanker. Large storage facilities were required to offset the winter closure of the port. In 1941, as a war emergency measure, the Portland-Montreal pipe line was constructed with an initial capacity of 50,000 barrels per day. At the present time, as will be seen in Table XXXIV, the bulk of crude oil imported is trans-shipped from ocean tankers at Portland, Maine, and moved over the 236-mile Portland-Montreal pipe line system, which now has a capacity of some 253,000 barrels per day. Seventy miles of the system, which consists of an 18-inch and a 12-inch line, lie within Canada and the remainder is in the United States. Although crude oil still reaches Montreal direct by tanker, the proportion is relatively small and has been decreasing in relation to total deliveries.

TABLE XXXIV — CRUDE OIL RECEIPTS AT MONTREAL BY METHOD OF DELIVERY, 1950-1958
(millions of barrels)

<i>Year</i>	<i>Via pipe line from Portland, Maine (a)</i>	<i>Tanker deliveries to Montreal harbour (b)</i>
1950	27.0	14.6
1951	45.6	8.6
1952	49.8	5.1
1953	53.0	5.6
1954	53.3	8.4
1955	67.7	6.3
1956	76.8	10.4
1957	81.4	7.0
1958	78.5	7.0

Source: (a) Submission to the Commission by Montreal Pipe Line Company Limited.
(b) National Harbours Board Annual Reports.

The Montreal market is also supplied by imported products. These normally constitute 10 to 15 per cent of total oil supply in the Province of Quebec. They are, for the most part, delivered by tanker to Montreal.

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Whereas crude oil enters duty-free into Canada, the different petroleum product imports are subject to various rates of duty, averaging approximately 18 cents per barrel. The entry of these products into Montreal is a contributing factor in establishing the prices of products of the Montreal refineries.

Products manufactured in Montreal refineries reach markets in the Province of Quebec principally by rail and road, although some are shipped by tanker on the St. Lawrence River. Shipments to the Maritimes while relatively small have been mainly by tanker. The principal shipments to Ontario are made through the Trans-Northern products pipe line. This line extends 398 miles, from Montreal to Hamilton, with a 42-mile branch line to Ottawa from a point near Cornwall. The line has a capacity in the main Montreal-Toronto section of 80,000 barrels per day, having been increased from its initial 1952 capacity of 40,000 barrels per day.

**TABLE XXXV — CRUDE OIL REQUIREMENTS, FOREIGN AND DOMESTIC,
OF THE MONTREAL REFINING CENTRE, 1962 AND 1967**
(in thousands of barrels per day)

	<i>Oil and Gas Conservation Board of Alberta</i>	<i>The British American Oil Company Limited</i>
Montreal supplied by foreign crude oil		
1962 — Crude oil imports	261	222.6
— Product imports	20	65.4
Total crude and products	281	288.0
1967 — Crude oil imports	331	283.8
— Product imports	20	85.1
Total crude and products	351	368.9
Montreal supplied by Canadian crude oil		
1962 ¹ — Crude oil imports	51	.....
— Western Canada crude oil ...	210	204.9
— Product imports	20	81.5
Total crude and products	281	286.4
1967 — Crude oil imports	71	.....
— Western Canada crude oil ...	260	261.4
— Product imports	20	105.6
Total crude and products	351	367.0

¹ The Conservation Board forecast assumes that imports of products would continue at approximately the 1958 level, and that Canadian crude would meet 80 per cent of the crude requirements of Montreal refineries, i.e., 210,000 barrels per day of Canadian crude and 51,000 barrels per day of imported crude. The British American Oil Company forecast assumes that the deficit in the refinery yield of middle distillates and residual fuel oil arising from the use of light gravity crude from Western Canada would permit maximum refinery runs of 204,900 barrels per day to meet the expected gasoline demand, with the remaining oil requirements being met entirely by petroleum product imports.

Source: Submissions to the Commission.

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The Commission received several estimates regarding the future growth of the Montreal refining centre. These were expressed in terms of crude oil requirements and were based on two assumptions, one being that Montreal would continue to be supplied by foreign crude and the other that it would be supplied by Canadian crude. The estimates, for the years 1962 and 1967, of the Oil and Gas Conservation Board of Alberta and of The British American Oil Company Limited are shown in Table XXXV.

On the assumption that Canadian crude will be marketed in Montreal the estimates made by the Oil and Gas Conservation Board of Alberta and The British American Oil Company Limited do not differ appreciably. The differences arise from the relative importance attached to the import of foreign crude and products. These differences affect the anticipated level of refining operations in Montreal rather than the volume of Canadian crudes which the market might absorb. The estimated demand for Canadian crudes for 1962 is approximately 210,000 barrels per day and for 1967 is approximately 260,000 barrels per day.

Corporate Affiliations of the Refining Companies

Share control of all the companies having Montreal refineries is held, directly or indirectly, by international oil companies: Imperial Oil Limited by Standard Oil of New Jersey; The British American Oil Company Limited by Gulf Oil Corporation; Shell Oil Company of Canada Limited by the Royal Dutch-Shell Group; Texaco Canada Limited by Texaco Inc.; Canadian Petrofina Limited by Petrofina, S.A. and BP Refinery Canada Limited by the British Petroleum Group, through The British Petroleum Company of Canada Limited. All of these international companies, with the exception of Petrofina, S.A., directly or indirectly control large reserves in the Middle East. Apart from the British Petroleum Group they also control substantial reserves in the Caribbean. Standard Oil of New Jersey, Gulf Oil Corporation, the Royal Dutch-Shell Group and Texaco Inc. have an estimated 87 per cent interest in total Venezuela crude oil production.

Each Montreal refining company has well established arrangements for supplies of crude oil, principally from companies within the control of its majority shareholder. In the case of Canadian Petrofina Limited, the Commission was informed that Petrofina, S.A., although having no reserves in the Middle East, had agreed to guarantee a supply at competitive prices. The Montreal refining companies are, therefore, in a position to obtain crude oil supplies from the principal producing areas of the world. By reason of

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the fact that, in general, international affiliates supply these refiners at their posted prices, shipments into the Montreal market have seldom reflected the low prices of "distress" oil.

The five companies currently operating refineries in Montreal owned or controlled approximately 80 per cent of Canadian refining capacity at the end of 1957 and are comparatively large owners of oil reserves in Western Canada. In 1957, these companies produced some 78 million barrels of Canadian crude or about 43 per cent of total production in Canada. This would be equivalent to 90 per cent of the crude oil imported into Montreal in that year. The companies have rights covering more than one-half of the proved crude oil reserves in Western Canada and certain of them have large investments in both the Interprovincial and Trans Mountain pipe line systems. As a group they would benefit from the increase in production resulting from access of Canadian crude to the Montreal market to the extent of a very substantial percentage of the enlarged production, because of the high degree of shut-in capacity in the fields where they are major reserve holders. On the other hand, they would not share equally in such a production increase because two of the companies control approximately 75 per cent of the present annual production of the group in Western Canada. Those companies with large investments in pipe line facilities would also benefit from their increased use.

Tanker transportation arrangements vary among the different refining companies in Montreal. Some companies own tankers which transport part of their supply of foreign crudes, while others use tanker facilities provided by parent or affiliated companies or by charter-party. One refining company has two tankers under charter-party: one terminating in 1965 and the other in 1974. All other charter-parties, in respect of which testimony was given to the Commission, expire not later than 1962. Although there is considerable variation in the rates secured under the different tanker arrangements, over any period of time such transportation costs of crudes imported into Montreal generally reflect the more stable costs of company-owned or chartered tankers, rather than the more widely fluctuating transportation costs of "spot" tanker shipments.

The five companies operating refineries in Montreal are the sole owners of the Portland-Montreal oil pipe line. The Trans-Northern products pipe line is owned by The British American Oil Company Limited, Texaco Canada Limited and Shell Oil Company of Canada Limited. Imperial Oil Limited does not use this line. Canadian Petrofina Limited makes shipments through it under arrangements made in 1953 for a period of three years and since extended until 1962.

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Pipe Line Proposals for the Transportation of Western Canadian Crude to Montreal

The size of the market for crude in the Montreal area, in relation to potential Canadian production, is sufficient reason to consider the feasibility of transporting Canadian crude to Montreal. Several companies have reviewed the question a number of times in the past few years. However, the marketing difficulties faced by the industry in late 1957 increased the interest in this possible market for Canadian crude. A detailed pipe line proposal was put before the Commission by a group of companies under the leadership of Home Oil Company Limited. This proposal was changed and further developed and at later hearings was presented on behalf of Independent Pipe Line Company, which became the spokesman for the Home Oil group. Interprovincial Pipe Line Company also submitted its views and gave the Commission information as to how its line could be extended to Montreal. Canadian Bechtel Limited, at the request of the Commission, made a review of the various proposed routes and costs involved.

Home Oil Group and /or Independent Pipe Line Company

As a result of engineering studies, a route, following, in general, that of the Interprovincial Pipe Line Company from Alberta to northern Michigan, thence crossing into Canada at Sault Ste. Marie and going directly to Montreal, was selected as the most economical by the Home Oil group and the Independent Pipe Line Company.

In the first presentation of the proposal by the Home Oil group throughputs had been based on deliveries in Montreal only. As a result, a pipe line of 30-inch diameter was considered as the most economical size. In a later presentation by the Independent Pipe Line Company estimated throughputs were increased to take care of part of the Ontario demand by deliveries to Interprovincial Pipe Line Company at Superior and later by a new line from North Bay to the Toronto refinery area. The revised proposal, to which subsequent discussion in this report is confined, envisaged a 36-inch diameter line from Edmonton to Superior and a 34-inch line from Superior to Montreal.

The total length of the line from Edmonton to Montreal would be 2,020 miles, with about 40 per cent of its length in the United States. Estimates of throughputs assumed that the pipe line during its first full year of operation would serve 70 per cent of the Montreal demand or, according to the Independent Pipe Line Company, 224,000 barrels per day in 1961. This throughput, it was felt, would increase to 402,000 barrels per day or 85 per

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cent of the estimated demand by 1970. The estimated throughput also assumed deliveries to the Interprovincial pipe line system, as mentioned above. In consequence, initial total throughputs from Alberta were estimated at 253,000 barrels per day in 1961 and 718,000 barrels per day in 1970. The initial cost of this line was estimated at \$370 million, increasing by 1970 to \$414,553,000.

It was claimed that a line such as that proposed would effect all the economies of a modern, large-diameter pipe line. The Montreal market was large enough to support a large-diameter pipe line. Furthermore, a high load factor could be assumed because a gradual build-up of the market would not be necessary if the Government took steps to restrict the import of foreign crudes. Cost calculations were therefore made on the assumption of a 98 per cent load factor. The calculations of the cost of service of the pipe line included depreciation, interest, operating costs, return on investment and income taxes. It was estimated that the cost of service from Alberta to Montreal, assuming a growth of throughput as mentioned above, would be 72.7 cents per barrel in the first year of operation, decreasing to 48.1 cents per barrel in the fourth year, with further reductions as the throughput increased. It was indicated that these estimated costs did not allow for variations in refinery demands due to seasonal factors, unforeseeable competition in serving the areas considered and temporary fluctuations in the growth of markets.

An essential feature of the cost analysis presented by Independent Pipe Line Company was that the estimated revenue for each of the first 10 years was calculated on the basis of the cost of service during the fourth year of operation. This method of calculation enabled the Company to suggest the possibility of relatively low transportation charges during the initial years. The Company considered such a plan to be a sound commercial proposal which could be financed if appropriate throughput agreements were entered into by the Montreal refining companies.

Interprovincial Pipe Line Company

Interprovincial did not present detailed proposals with respect to a proposed pipe line to Montreal. It did emphasize, however, that it considered its present line a modern low-cost line, which could not be replaced by a new single 30-inch line, with adequate pumping stations, at anything like the actual cost of the present facilities. Interprovincial emphasized the advantages it felt it had over any other company which might want to build a line to Montreal: it could use part of its present facilities; it would be in a better position to finance the project than a completely new company and

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it would have greater flexibility than a new direct line from Alberta to Montreal, as it had access to sources of crude from all over Western Canada and made deliveries at a number of points along its system.

The Company informed the Commission that its preliminary studies suggested that Canadian crude oil could be delivered to Montreal through an extension of its system, by means of a further 26-inch line running from Sault Ste. Marie to Montreal, at a tariff of about 70 cents per barrel, if a throughput of 150,000 barrels per day were guaranteed. This tariff might be reduced as volumes increased over the years. Subsequently the Company indicated that further investigations had confirmed that the Sault Ste. Marie route was the most favourable one and that it could deliver 200,000 barrels of crude oil per day to Montreal, within one year, at a capital cost of \$150 million. This could be done by accelerating the present expansion programme of the Company and by constructing a 30-inch line from Sault Ste. Marie to Montreal. At the same time, it would be able to supply the Ontario market with a further 100,000 barrels per day, with an additional capital expenditure of \$116 million.

Interprovincial claimed that the transportation tariff on its expanded system would be comparable to that of any other system if volume, guarantees of throughput and rates of return were similar. To achieve minimum tariffs, capital expenditures would have to be kept to a minimum and throughputs would have to remain close to the capacity of the system. The Company argued that the best approach to achieve low-cost transportation of Canadian crude to Montreal was a step-by-step construction programme, in line with market demand and long-term objectives, avoiding the building of facilities which might not receive maximum use for some years.

Canadian Bechtel Limited

Canadian Bechtel Limited, at the request of the Commission, prepared a study of alternative methods of transporting Canadian crude oil to Montreal by pipe line. In making this study, the Company recognized that so many variables could be considered that the study would be too complex and the presentation too complicated unless it held to a definite pattern. It decided that the most realistic approach was to prepare the report exactly as if it were being prepared for industry. Accordingly the report was prepared as a standard commercial yardstick against which the Commission could measure the economics of a pipe line to Montreal. Two basic transportation methods were considered: a new direct line and an expanded Interprovincial pipe line system.

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For a new direct line three possible routes were considered by Canadian Bechtel Limited: firstly, an all-Canadian route approximately along the route of the Trans Canada gas pipe line; secondly, a route via Sault Ste. Marie and across northern Ontario direct to Montreal, and thirdly, a route approximately paralleling the Interprovincial pipe line to Toronto and continuing to Montreal. Its analysis showed that the line through Sault Ste. Marie, which is similar in location and total mileage to the routes considered by Independent Pipe Line Company and Interprovincial Pipe Line Company, would be the cheapest. Canadian Bechtel estimated that the capital cost of a 30-inch diameter line following this route, having a design capacity of 300,000 barrels per day and capable of an average throughput of 255,000 barrels per day, would be \$344,910,000. It further estimated that this line would give a unit cost of transportation of 73.9 cents per barrel from Edmonton to Montreal for the first year of operation. The unit cost of transportation would, of course, increase for lower average throughputs and it was estimated that there would be a unit cost of 81.5 cents per barrel, for an average throughput of 212,500 barrels per day for the first year of operation, for a 30-inch diameter line having a design capacity of 250,000 barrels per day.

The estimated unit cost of transportation of 73.9 cents per barrel for the initial year was calculated by Canadian Bechtel Limited from annual transportation costs made up as follows:

Operation	\$ 8,358,000
Depreciation	11,858,000
Amortization of financing expense ..	204,000
Interest	12,934,000
General Taxes	3,388,000
Income Tax	15,068,000
Net Income	16,991,000
	\$68,801,000
Total	

Canadian Bechtel Limited also examined the cost involved in extending the present Interprovincial pipe line system from Toronto to Montreal. It considered that such an extension, taking into account the reserve capacity in the system, would require a new pipe line section covering the 345 miles between Toronto and Montreal, in addition to some pipe line looping and further pumping capacity in the present system. It estimated the transportation cost from Edmonton to Montreal on this system would be 69.1 cents per barrel for an average throughput of 255,000 barrels per day, 69.4 cents for 212,500 barrels per day, 74.7 cents for 170,000 barrels per day, 76.0 cents

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for 127,500 barrels per day and 66.6 cents for 85,000 barrels per day. These were estimated costs for the first year of operation. The capital cost of new facilities for the expanded system, as estimated by Canadian Bechtel, ranged from \$79,928,000 for a throughput of 85,000 barrels per day to \$290,022,000 for a throughput of 255,000 barrels per day but the effect of the existing reserve capacity and the cost of the additional pumping and looping on the existing line was found to be different for each of the average daily throughputs. As a result, the estimated transportation cost per barrel from Edmonton to Montreal was less for a throughput of 85,000 barrels per day than for 127,500 barrels per day and, for larger volumes, the decrease in the cost per barrel was not in direct proportion to volume increases.

Table XXXVI sets out the cost estimates relating to the four alternative routes included by Canadian Bechtel Limited in its study, based on identical average daily throughputs of 255,000 barrels.

TABLE XXXVI—COST DATA ON ALTERNATIVE PIPE LINES
EDMONTON TO MONTREAL
(first year costs)

	<i>Distance</i>	<i>Total cost</i>	<i>Cost of transportation per barrel</i>
Expanded Interprovincial Pipe Line System	2,245*	\$290,022,000	69.1¢
All Canadian route	2,100	\$395,335,000	83.9¢
Via Sault Ste. Marie	2,060	\$344,910,000	73.9¢
Parallel to Interprovincial Pipe Line System	2,245	\$368,363,000	78.8¢

* Total length of system; the extension from Toronto to Montreal would require 345 miles of new line, plus looping on the existing line.

Source: Submission by Canadian Bechtel Limited.

Canadian Bechtel Limited reached the following specific conclusions in regard to a pipe line to transport western Canadian crude to the Montreal market:

1. "From an engineering standpoint there are no insurmountable problems involved in the construction or operation of an oil pipeline from Edmonton to Montreal.
2. If an entirely new pipeline system is to be built the most economical route parallels the Interprovincial line to Superior and thence goes eastward through Sault Ste. Marie directly to Montreal.
3. For the movement of average daily volumes of crude oil up to 300,000 barrels, transportation by an expanded Interprovincial system has an economic advantage over a new direct pipeline system. Based on the conditions and assumptions outlined in the report at an average daily volume of 255,000 barrels, the cost of transportation in a new direct

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pipeline will be 73.9 cents per barrel and 69.1 cents per barrel through the expanded Interprovincial system. At lesser volumes the economic advantage is even greater.

4. Construction of an entirely new pipeline system or a major expansion of the Interprovincial system would in our opinion require two construction seasons for completion."

Canadian Bechtel Limited pointed out to the Commission that the major differences between its estimates and those of the Independent Pipe Line Company arise from its adherence to conventional practices in the financing of oil pipe lines. In the opinion of Canadian Bechtel the procedures used by the Independent Pipe Line Company, on the other hand, followed more closely the practices in the gas pipe line industry. It pointed out that two conditions considered essential for the successful financing of gas pipe lines are a secure supply of gas and sales contracts to ensure market outlets. Supply is normally assured by purchase contracts, in amounts sufficient to provide for the amortization of the pipe line, supported by proven reserves dedicated to the pipe line by the regulatory authority. In addition to providing a secure supply and a dependable outlet, gas purchase and sales contracts also establish a long-term price at which the gas is purchased and sold. These conditions reduce the risk in gas, as compared to oil, pipe line financing and permit a lower rate of return and a lower ratio of equity capital to funded debt, than is usual in oil pipe line financing. Such conditions have enabled gas pipe line companies to accept lower returns in the early years of operation by averaging profits over the first few years. A third condition tending to reduce the cost of service on gas pipe lines, as compared to oil pipe lines, is that for operational reasons a gas pipe line can be used at a higher load factor than can an oil pipe line. In its analyses Canadian Bechtel used a load factor of 85 per cent compared with one of 98 per cent used by Independent Pipe Line Company.

Canadian Bechtel Limited advised the Commission that if the financial risks of an oil pipe line from Alberta to Montreal could be made comparable to those of gas pipe lines, by creating conditions appropriate to an assured supply of oil as well as of markets, the estimated costs of service could be reduced by reason of the lower risks involved. Based on this assumption, the Company estimated that the unit cost of transportation on the line with an average throughput of 255,000 barrels per day would be reduced from 73.9 cents per barrel to 61.5 cents per barrel, for the first year of operation, and that during the fourth year of operation the cost would be reduced to 58.5 cents per barrel.

A comparison of the analyses made by Canadian Bechtel and Independent Pipe Line Company shows that Canadian Bechtel assumed funded debt to be 75 per cent rather than 85 per cent of total capital as assumed by

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Independent Pipe Line Company. Interest on debt was taken at 5 per cent by Canadian Bechtel compared with 5.25 per cent by the other Company. Canadian Bechtel based net income on a net return of 5 per cent on the cost of plant after payment of interest. This would amount to a return of 8.75 per cent before payment of interest, compared with a 7.5 per cent return before payment of interest assumed by the Independent Pipe Line Company.

Obviously the rate of return on the capital invested in a pipe line will significantly affect the cost of service. A variation in the rate of return on investment of 1 per cent from the 5 per cent assumed by Canadian Bechtel would result in a change in unit cost of transportation of approximately seven cents per barrel from the figure of 73.9 cents per barrel noted above.

Government-Owned Pipe Line

It is apparent that methods of financing and interest rates play an important role in the determination of the cost of transmitting oil by pipe line. Estimates of transmission costs must also take into account the payment of income taxes. Such income tax payments, of course, enter the estimates as a cost and thus affect the anticipated return on the investment. Estimates of transmission costs also reflect a rate of depreciation based on normal financial procedures. This rate of depreciation may be somewhat higher than is required if the physical life of the line were the only consideration. These factors, together with an appreciation of the historic role of transportation facilities in creating and consolidating the Canadian economy, prompted the Commission to enquire whether or not it might be practical, by means of a publicly-owned line, to improve the competitive position of Canadian crudes in the Montreal market, without requiring an increase in the price of petroleum products to consumers in that area. Such a pipe line might be regarded as a transportation facility created to serve the national interest.

An all-Canadian route is the only one which would seem to be compatible with government ownership of the facility. Canadian Bechtel Limited was asked by the Commission to estimate the cost of transportation through such a pipe line and under date of October 1, 1958, advised as follows:

"We have prepared an estimate as you requested in your letter to me of September 24th of the capital and operating costs of transporting 200,000 barrels of oil from Edmonton to Montreal under the special financial conditions that you have stipulated. Those conditions briefly being:

- (1) That the capital cost be determined on the basis of following an all-Canadian route and assuming a throughput capacity of 200,000 barrels per day; and

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- (2) That the operating costs be determined when assuming that the total capital cost is represented by funded debt at five percent interest with depreciation of two percent per annum and assuming no profit.

In preparing the estimate we have assumed that the line would operate at an average load factor of 85%. Further, we have assumed present day costs throughout the estimate.

When applying the special conditions that you stipulated we firstly analyzed a pipeline economically designed for 200,000 barrels average daily throughput, and a second case of a pipeline initially transporting 200,000 barrels per day but capable of being expanded to 300,000 barrels average daily throughput.

Under normal financing arrangements the first case would be served most economically by a 26" diameter pipeline, and the second case by a 30" diameter line.

The special financing arrangements that you have stipulated, however, of using abnormally low depreciation and making no allowance for income or income taxes affects the overall cost to such an extent that it becomes more desirable to invest additional money in the larger pipeline and thereby reduce the capital and operating expenses of additional pumping stations. Thus, under these special conditions a 30" pipeline would give the same transportation cost as a 26" pipeline at 200,000 barrels average daily throughput. The throughput of the 30" line could be increased to transport 300,000 barrels per day.

The studies of this situation have brought us to the following:

- (a) We estimate that the initial cost of this 30" diameter pipeline would be \$380,000,000 based as mentioned on present day costs; and
- (b) Excluding income and income taxes, and with a depreciation rate of only two percent per year, a transportation charge of 49 cents per barrel would be sufficient to cover direct operating costs, interest and depreciation when transporting on the average 200,000 barrels per day through an all-Canadian pipeline from Edmonton to Montreal.

In conclusion, I should mention that as the basis of calculation you have asked me to use is not similar to a normal commercial approach, the conclusions reached are not directly comparable with estimates prepared for a normal type of development. I know you fully appreciate the differences, but when an engineer follows an unusual financial approach in estimating the cost of some process or act, you will understand how anxious he is lest the figure so prepared be used in some way in direct comparison with the estimated cost of the same process when using a normal financial approach."

The question of public ownership of such a pipe line, of course, involves considerations beyond the question of securing lower transportation costs to permit the Montreal market to be reached by Canadian crude.

Different Views on the Desirability of Marketing Canadian Crudes in Montreal

The Commission has endeavoured to summarize and interpret the relevant testimony given to it by those who advocated and by those who opposed the construction of an oil pipe line from Western Canada to

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Montreal and the use of Canadian crude in the Montreal refinery area. The order in which the various arguments for and against the proposal appear in this summary cannot be expected to reflect the different emphasis placed upon them by various parties appearing before the Commission. The summary and interpretation should not be construed as representing the views of the Commission.

Proponents' Views

The proposal of the Home Oil group with respect to the construction of an oil pipe line from Edmonton to Montreal followed extensive investigations. These included a report by Dutton-Williams Brothers Limited of Calgary, Alberta, entitled "Preliminary Engineering Report on Proposed Alberta-Montreal Crude Oil Pipeline" and a comprehensive study by W. J. Levy Inc., of New York, entitled "Market Outlets for Canadian Crude Oil: Problems and Prospects".

From their interpretation of these studies the Home Oil group contended that western Canadian crudes could be laid down in Montreal competitively with imported crudes. The group concluded that no other secure market outlets for Canadian crudes were likely to develop and that, in view of the magnitude of the marketing problems facing the industry, government support for the proposed pipe line to Montreal was warranted.

Inasmuch as it was contended that Canadian crude could be laid down in Montreal at prices competitive with those of foreign crude, the group maintained that the only action needed by the Government of Canada would be such as would require the Montreal refiners to agree to take Canadian crude over the period of amortization of the line. It was conceded that throughput agreements with the Montreal refiners would be necessary to enable the pipe line to be financed. If such throughput agreements were forthcoming voluntarily it was felt that no specific government action would be necessary. However, because of the fact that the Montreal refiners have established sources of crude, produced in foreign concession areas by affiliates of their international parent companies, it was suggested that, in order to overcome this commercial interest and not because of competitive difficulties, the Government might have to establish a system of import quotas on crude. As prices would be competitive, import duties would not be needed. Subventions would not be required for the operation of the pipe line because it would be a commercial proposition once throughput agreements had been entered into by the refiners. It was conceded that it might also be necessary for the Government to establish quotas on the import of petroleum products in order to ensure the fullest possible use of

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Canadian crude in the Montreal refining area. Thus, while Government support would be needed, it was claimed that this would not mean extensive control over any phase of the industry.

Regarding alternative markets, the group contended that the import restrictions imposed by the United States prevented Canadian crude from reaching, in adequate volume, what had been called its natural markets in the United States. In addition, it was felt that the "commercial preference" of refining companies in the United States, for the use of crude produced by affiliated companies in foreign countries where they owned concessions, was a very material factor in preventing Canadian crude from reaping the full benefits of its geographic and competitive advantages. This preference would exist even if United States import restrictions were to be lifted. Moreover, there was every indication that the influence of the import restrictions and of the "commercial preference" of the refineries was of a long-term nature and would still persist when the difficult marketing conditions resulting from the recession disappeared.

It was argued by the group that, unless markets other than those presently being supplied by Canadian crude became available, the future of the oil industry in Western Canada would be in jeopardy. The ratio of production to producibility would be kept at a low level. There would be a lack of incentive to continue to explore and develop Canada's oil resources. A continuing low level of production would seriously affect the producing sector of the industry. Revenue would not justify past expenditures and it would become more difficult to finance future expansion. The major companies, because of their ability to rely on capital generated within the parent company's group, could withstand these difficulties for substantial periods of time. The smaller independent companies which have played a vital role in the growth of the Canadian oil industry, especially in the wildcat drilling phase, would undoubtedly lose ground to the major integrated companies. They have no large resources of working capital but depend, to a large extent, upon short-term credit from the banks. With prolonged marketing difficulties this source of credit could be denied them.

While it was recognized that there would be an increase in demand in the domestic markets now served by Canadian crude, this would not be sufficient to resolve the industry's production and marketing difficulties. Only a substantial, new and secure market could provide material assistance in this respect. The Montreal refining area was the only satisfactory potential market available and this outlet could provide for an increase of approximately 40 per cent in the production of Canadian crude. The growth of this market over the years would ensure a continuing high level of production for the industry and, because it could be made secure, was much more

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desirable than possible United States markets, even of the same magnitude. With such a market the industry could better plan its future expansion and development programme, secure in the knowledge that production would not have to be substantially reduced as a result of any action over which Canada could have no control.

It was suggested that consumer prices would in no way be affected as Canadian crude would be competitive in price with imported crudes and as the prices of petroleum products in Eastern Canada are not directly related to the price of crude oil used by the refineries but must, in general, conform to the prevailing prices of actual or potential imports of petroleum products. The price of Canadian crudes at the well-head would not be adversely affected because the prevailing system whereby such prices were established by reference to the laid-down cost of Illinois crudes at Sarnia would continue in operation. Changes in world prices are reflected in the cost of Illinois crude at Sarnia; consequently the use of Canadian crude at Montreal need not make well-head prices any more susceptible to changes in world prices than they were already. Thus, it was claimed, the Montreal market proposal would be beneficial to the producing sector of the industry without being detrimental to the eastern Canadian consumer.

Other arguments were put forward to justify the intervention of the Canadian Government. There would be important effects on employment. As a result of the expansion of production in Western Canada much of the unemployment that would result from what would otherwise be a levelling-off of production and of exploration and development would be avoided. In addition to encouraging employment in the production sector, the implementation of the proposal would create employment in those sectors of the Canadian economy which provide the oil industry with goods and services. The construction of the \$350 million pipe line itself would also provide for the employment of Canadian labour and the use of substantial quantities of Canadian materials. The existence of the pipe line, it was suggested, could also lead to the development of refinery capacity in population centres now served by refineries in southern Ontario or Montreal, with a resulting stimulus to local industry as well as a reduction in the cost of petroleum products in such centres.

Another advantage, the group said, was that in replacing imports of crude oil into the Montreal refinery area by Canadian crude there would be a substantial saving of foreign exchange to Canada, estimated to amount to about one-quarter of Canada's merchandise trade deficit in 1956. It was claimed also that a pipe line to Montreal would lead to greater national security for Canada. The area served by the Montreal refining complex is highly industrialized and could experience great difficulties if the flow of

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foreign crude were to be interrupted at any time. By contrast, a pipe line from Western Canada would assure the Montreal area of a constantly available land-borne supply of crude oil and remove its continual dependence upon the availability of crudes imported from overseas.

Canadian Husky Oil Limited strongly supported the proposal to market Canadian crude in Montreal. Objection was taken to the contention that the United States is a natural and logical market for Canadian crudes, because United States producers are already facing restricted markets and, furthermore, Canadian crude is not competitive with other foreign crudes in that country, except in some border areas. This company believed that additional markets for Canadian crude could only be assured by the construction of a pipe line to Montreal and direct government action to restrict imports.

Another group of nine independent oil companies also appeared before the Commission under the leadership of Bailey Selburn Oil and Gas Company Limited. There were differences of opinion among the group but the general consensus, while difficult to summarize, appeared to be that the Montreal market should be entered if alternative outlets in the United States of a continuing and long-term nature could not be developed within a reasonable period of time.

The proposal to market Canadian crude in Montreal received strong support from the Alberta Government through Premier Manning. In the course of one of Mr. Manning's appearances before the Commission, he said:

"Analyses made for me by the staff of the Oil and Gas Conservation Board indicate that the expansion in the Ontario market and the re-establishment of export at its former level in the two United States markets (with reasonable growth provision) would bring about a market growth insufficient for an effective solution to the problem. I believe that the eastern two of these three market areas would assure producers in Manitoba and Saskatchewan a continued outlet for their crude oil due to their geographical locations, but the improvement in Alberta would fall far short of what is necessary to meet the situation. I have been advised that with these markets, Alberta producers could look forward to marketing in 1960 only approximately 49 per cent of the oil which could be produced under good engineering practice. I, therefore, conclude that not only from the viewpoint of Alberta but from the consideration of Canada as a whole, these proposals do not go far enough, and expansion of our market either into Quebec or further into the United States or both, is a necessity."

He also emphasized that the price to the consumer in the Montreal market should not be increased.

The Government of Saskatchewan held that it was preferable for Canadian oil to move to the greatest extent practicable to the nearest economic markets. It also expressed the opinion, however, that continued import

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restrictions in the United States might result in no outlet other than Montreal being available to the shut-in production of Canadian crude. If such were the situation any action to open the Montreal market to Canadian crude would be of material assistance.

The study made by W. J. Levy, Inc., of New York, to which we have already referred, stated this firm's views with respect to the Montreal market as follows:

"31. In sum, the Montreal market is not an obvious direction of expansion from a logistic point of view and it poses the more difficult problems even in the narrow context of competitive price relationships. If the possibilities of exports to the United States appear to be adequate to the future development of the Canadian oil economy, and the uncertainties attaching to market expansion in the United States are not too discouraging, then Canadian oil may reasonably await a future expansion of its export markets without actively seeking an outlet in eastern Canada.

"32. If, on the other hand, the uncertainties of the U.S. export market appear to inhibit the balanced development of Canadian resources, or the cost of waiting for expanded market opportunities in the United States is too high, then the Canadian producing industry might have to seek relief where its own national policies could prove effective. This would, in fact, mean a penetration of the Montreal market."

Mr. W. J. Levy, at the invitation of the Commission, appeared at its hearings in Calgary and gave his views with respect to the factors which must be considered in providing for the use of Canadian crude in the Montreal refinery area in their relation to the need for additional outlets for Canadian crude. He stated that Canada faced a severe problem with regard to market outlets for crude, that this had been aggravated by the recession but not caused by it and, in his opinion, would not end when the recession ended. He felt that the marketing problem for Canadian crude should be approached on an intermediate level and on a long-term level, bearing in mind that what could be done in the immediate future should be done in a manner that would not handicap the industry. He pointed out that any relief to the industry that required large new facilities would take one to two and one-half years to become effective and that, therefore, any immediate relief to the industry's marketing problem would have to be based on the use of existing facilities. He felt that the Montreal refiners might be induced or encouraged to arrange for larger volumes of Canadian crude oil going to the West Coast of the United States as a quid pro quo for the importation of foreign crude by these Montreal refiners. He felt that the prospects in the United States for large scale exports from Canada might well give a profitable outlet for Canadian crude. He also felt that in order that there might be an overall agreement between Canada and the United States on a common oil market, it would be necessary that there be a common policy for Canada, the United States and other Western Hemisphere countries and that controls

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which the United States has already or may have to impose in the name of security would have to be considered by Canada also in the light of any such common policy.

Opponents' Views

The most vigorous and detailed opposition to the proposal to build a pipe line to Montreal at this time and to service that area with Canadian crude came from those companies which are refiners in Montreal, but other international companies, operating in Canada mainly as producers or as refiners in other areas, also opposed the proposal. The arguments presented varied in certain respects but there was a fair degree of unanimity on the major points. The Montreal refiners made it clear that they believed Canadian crude could not be laid down in Montreal by normal commercial means at prices competitive with those of foreign crudes. This was a major point of contention on matters of fact. It was argued that the pipe line proposal was not realistic because the minimum cost of transportation to Montreal would be in the neighbourhood of three cents per 100 barrel miles or a minimum of approximately 60 cents per barrel, at which rate, assuming no reduction in field prices, Canadian crude in Montreal could not compete with foreign crudes. They pointed out that the laid-down cost of foreign crudes at Montreal was lower than that assumed in the calculations submitted by the Home Oil group and that this group had used for their price comparison a crude of a gravity similar to that of western Canadian crude, although crude of such gravity was not used in any appreciable quantity by Montreal refiners. Instead, the Montreal refiners processed crudes of lower gravity which were cheaper in price and better suited to the type of product demand in the Montreal marketing area.

The Montreal refiners contended that in purchasing Canadian crude they would be subjected to a number of disadvantages in their refinery operations. They would have to sacrifice the flexibility of supply with respect to their raw material without having the assurance of price protection for their products. Increases in import tariffs on petroleum products would be needed to ensure that the Montreal refiners would maintain their present competitive position in regard to products from overseas, thereby penalizing the consumer in Eastern Canada. The Montreal refiners agreed with the Home Oil group that no serious technical problems were involved in processing Canadian crude in Montreal refineries although some modifications might be necessary. However, for some of the Montreal refiners, with equipment specially designed to process medium gravity sour Middle East crudes, a dependence on Canadian crude would necessitate the write-off of substantial amounts of capital equipment.

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Certain other facilities serving the Montreal refinery area would have to be taken into account. These would include the tankage and wharfage facilities in the Montreal harbour, the Portland-Montreal pipe line, company-owned tankers and tankers under charter. It was estimated that the cost of abandoning the Portland-Montreal pipe line would be the equivalent of a seven cents per barrel charge added to the laid-down cost of Canadian crude at Montreal. Montreal refiners, as shareholders in Montreal Pipe Line Company Limited and Portland Pipe Line Company, are guarantors of the long-term indebtedness of the two companies. This amounted, as at March 31, 1958, to \$1,714,157 in Canadian funds and \$6,796,666 in United States funds. At par of exchange and allowing for the offset of existing working capital in the pipe line companies against this debt, the ultimate claim would be \$6.7 million. To this would be added the cost of the shareholders' investment. One of the Montreal refiners, which has an 18 per cent interest in the long-term indebtedness of the two pipe lines, advised the Commission that the actual cash loss which would be reflected in its accounts, if the Portland-Montreal pipe line were to be shut down completely, would amount to approximately \$1,750,000. This amount includes the cost of its investment as a shareholder together with its obligation as a guarantor of long-term indebtedness.

Strong objection was taken by the Montreal refiners to the contention that a "commercial preference" for foreign crude was a factor in their opposition to the proposal. They asserted that companies operating refineries in Montreal conduct their business as Canadian companies. While admitting that they normally purchased their crudes at posted prices, mostly from affiliated companies owning concessions in foreign countries, they declared that if lower prices were offered by other producers such offers would be accepted, if consistent with normal deliveries. They argued that government action of some kind would be required to enable Canadian crude to be marketed in Montreal, that this would adversely affect the economics of the industry and that such action was not desirable at this stage since better alternative markets were available. Government support of the proposal, they declared, would be unwise and unwarranted. Instead, the Canadian Government should continue to press the United States Government for exemption of Canadian crude from import controls in order to facilitate the expansion of export markets for Canadian crude in the United States.

There was general agreement that the oil industry in Canada had to make readjustments. It was contended by the major companies, however, that many of the factors causing the low level of production were not basic, but of a cyclical nature, and would have only temporary effects. After such

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temporary difficulties were overcome, a healthier situation would develop provided the Ontario market could be saturated with Canadian crude and the export markets, principally those in the Puget Sound area, could be expanded. This, they admitted, would require a concerted effort by the industry and action by the Canadian Government insofar as markets in the United States were concerned. The Puget Sound market, it was felt, could be regarded as an assured market for Canadian crude in due course. In Ontario, substantial market expansion was possible because the demand for products in the area would continue to grow at a rapid rate; expansion in refinery capacity was already taking place and imports of foreign crude had been reduced and perhaps could shortly be completely eliminated. As refinery capacity grew, the Ontario refineries would produce a larger share of the products used in the Province, with the result that shipments made by the products pipe line from Montreal could be reversed. This last step, they stated, had, in fact, been planned by the oil companies owning the Trans-Northern products pipe line to take place in 1962 and any company that had indicated an interest in shipping products over the line had been so advised.

Assuming a moderate growth in export markets and the saturation of the Ontario refinery market by Canadian crudes, the integrated oil companies felt that the industry should be able to produce at a rate of 50 to 70 per cent of producibility, the latter being as high a ratio as the industry has experienced in the past. It was claimed, however, that this ratio is not a satisfactory yardstick by which to appraise the health of the industry. A more significant measure, it was argued, is the ratio of remaining reserves to annual production.

It was submitted that the prospects for the industry were not as gloomy as was indicated by the group of independent producers. Furthermore, it was not the independents but the integrated oil companies who suffered most from a low level of production, since they owned most of the "shut-in" capacity. A more balanced development of the industry could be helped by changes in provincial regulations to bring about a somewhat slower development of leased acreage and wider well spacing, thus reducing replacement costs. Similarly, changes in the method of calculating the minimum well allowance could be made so as to give greater recognition to efficient producing wells, rather than to marginal producers. The Government of Alberta felt that the significance of these latter factors had been exaggerated.

Objection was taken by the major companies to the suggested use of government controls to gain entry into the Montreal area for Canadian crude. It was argued that controls would lead to more controls and deprive the industry of the flexibility with which it has operated. Import quotas would have to be applied against crude imports, against the shipment of products from Maritime refineries, which would still operate on foreign crude, and

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against product imports. A system of import quotas might be workable but would create serious administrative difficulties. Tariffs on imports would be easier to administer but were not likely to be effective or suitable. Import duties would presumably apply to imports into the Maritime Provinces, even though it was not proposed that refineries in the Maritimes should utilize Canadian crude. In addition, the tariff method of restricting imports would lack the flexibility required to meet changes in world prices. A more direct method of achieving the objective would be to pay government subsidies to refineries equal to the difference between the laid-down cost at Montreal of Canadian and foreign crudes. However, the amount of subsidy needed would vary from time to time and become the subject of dispute between the various interested parties. To give direct subventions to a fast-growing industry might well provoke a public reaction in favour of further intervention in the affairs of the industry, including the control of profits.

Thus the attempt of the producing industry to improve its position for the short term might well cause it to become so involved in various government controls that it would lose some of the more permanent gains which would otherwise accrue under a completely free system. Moreover, government support in the initial stages might not suffice to make the project self-sustaining over the period required to depreciate the pipe line, because subsequent changes in government policy might have the effect of withdrawing such support, thereby penalizing the project. Another result of government action to isolate the Canadian industry from the competition of foreign crude would be, the refiners claimed, to deprive the consumer of the benefits of actual or potential foreign competition with respect to product prices.

The entry of Canadian crude into Montreal with government assistance, it was argued, would also create serious problems for the producers. If the competitive prices of overseas crudes in Montreal were to determine field prices in Western Canada, field prices would have to be reduced appreciably. The result would be a writing down of the value of existing and future reserves. In such circumstances there might not be an adequate incentive to the industry to find and develop the new reserves required to supply this additional market. Such new reserves would have to be equivalent to the total of today's proved reserves in order to sustain the pipe line for a period of 30 years. A careful appraisal of future replacement costs would be necessary to determine whether or not the increased volumes of production resulting from the Montreal market would compensate the producers for any reductions in field prices that might be necessary. Moreover, the rapid development of additional reserves needed to supply the Montreal market, in addition to an increased demand in existing markets, would probably raise replacement costs, thus increasing the likelihood of a decline in returns to producers.

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It was argued that, apart from the current competitive disadvantage of Canadian crude in Montreal, the competitive position of Canadian crude in the Montreal market would probably deteriorate in the course of time due to basic competitive cost advantages of these foreign crudes. The refining companies felt that they could not underwrite a pipe line to Montreal, thus committing themselves to the long-term use of Canadian crudes, without reasonable assurances that these crudes would be kept competitive with alternate sources of supply. Thus, producers, it was argued, would be obliged to commit their crude to a market exposed to the most competitive crude sources in the world, during which period of commitment other more economically situated markets (i.e. in the United States) might well become available in increasing volume. It was also argued that if Canadian crudes were marketed in Montreal under these circumstances, it might not be possible for Canadian crude prices to continue to be based on the price of Illinois crudes at Sarnia. This difficulty would arise because the price of Canadian crude at Sarnia, an inland location, is less directly influenced by the level of world prices than it would be at a seaboard location like Montreal. In addition, United States import restrictions provide a degree of insulation from world prices for the Illinois crudes which determine the price of Canadian crudes at Sarnia.

In addition to the imposition of import restrictions to protect the Montreal market for Canadian crudes, the Montreal refiners suggested that, if the pipe line proposal were accepted, the Government might be obliged to give a direct guarantee to the pipe line bonds in order to ensure that the project could be adequately financed. Most of the companies stated that, in the circumstances prevailing at the time, they would not voluntarily enter into throughput agreements to ensure the construction of a pipe line to Montreal.

Apart from the harmful effects on the industry itself, the major companies claimed government support of the entry of Canadian crude into Montreal by artificial means would be of doubtful benefit to the Canadian economy as a whole. A policy which could result in an increase in the cost of energy would not be in the national interest. An energy policy which gives the consumer the choice of the energy source most suited to his need, at the lowest price possible, can best be attained when energy resources are developed by private enterprise, with a minimum of government intervention. The Government, they suggested, should also be wary of the supposed benefits accruing to the balance of payments from the elimination of imports of crude oil. It is to the country's benefit to minimize its energy costs, even if this requires some imports, and to pay for those imports by the sale of commodities which can be produced in the country at low cost. Government action to secure the Montreal market for Canadian crude, it was stated, would raise many complex issues in the matter of international trade policy.

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New trade barriers would conflict with Canada's obligations under GATT and might also result in substantial dollar losses for the sterling area. The matter of national security, it was suggested, is more complex than had been indicated by the proponents of the project. On the military aspect itself, a variety of opinions might be held in view of changing strategic concepts and the possible need for the decentralization of refinery capacity and of industry. If the entry of Canadian crude into the Montreal market had the effect of reducing the attractiveness of the industry for investment, as might well be the case, a weaker industry would result to the detriment of Canada's ultimate security.

Competitive Position of Canadian Crude in Montreal

The differences of opinion on the economic feasibility of using Canadian crude oil at Montreal indicated the necessity of determining the cost of overseas crude oils to the Montreal refining companies. During its hearings the Commission received a number of estimates from the Montreal refiners with respect to the laid-down cost of foreign crude at Montreal. Computations were made for the most typical qualities of overseas crude imported, taking into account posted prices, transportation costs (including tanker costs), insurance and the transportation tariff on the Portland-Montreal pipe line, and adjusting the results from United States to Canadian dollars. These laid-down costs represented, in effect, individual company opinion of the industry's average cost experience. The actual cost of imported crudes to the Montreal refineries was not in fact represented by the estimates although indications were given that the variation might not be very great. These company estimates, at the time of the hearings, ranged from \$2.86 to \$3.14 per barrel (Canadian funds) for all sources of crude, with the range for Venezuela crude being somewhat narrower at \$3.07 to \$3.14 per barrel. A weighted average of these estimates on the basis of the crude oil supply situation in Montreal for 1957 would suggest an average laid-down price of about \$3.08 per barrel.

To acquire more precise information, the Commission requested from each of the Montreal refiners certain particulars concerning the laid-down cost in Montreal of crude oil for the month of December, 1958. These particulars indicate that western Canadian crude oil would have been at a competitive disadvantage of 25 to 35 cents per barrel at Montreal in December, 1958, if the pipe line tariff or costs appearing in the estimates of Canadian Bechtel Limited, in the order of 70 cents per barrel for the first year of delivery, were assumed. If the pipe line costs estimated by Independent Pipe Line Company are used, amounting to approximately 50 cents per barrel on the basis of fourth year cost of service, the competitive

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disadvantage would be in the order of 5 to 15 cents. These calculations do not make allowance for costs involved in any transition to the use of Canadian crudes, such as those arising out of the abandonment or a reduction in the level of operations of the Portland-Montreal pipe line, or possible losses associated with other investments, such as wharfage facilities or tanker commitments. On the other hand, they do not take into account any premium which might be accorded to Canadian crudes due to their relatively high A.P.I. gravity compared with the majority of crudes imported into Montreal.

As noted previously, decreases in world prices in February, 1959, brought reductions for the type of crude used in Montreal of 15 cents per barrel for crude from Venezuela and 18 cents for crude from the Middle East. Pipe line rates to Toronto via the Interprovincial pipe line were reduced and a reduction in the field prices of Western Canada crude also occurred. However, these changes do not materially affect the conclusion reached regarding the competitive disadvantage of Canadian crude in Montreal on the basis of its laid-down cost at the end of 1958.

The further price reduction in Venezuela in April, 1959, equivalent to about 10 cents per barrel in the laid-down costs of these crudes in Montreal, has not been followed as yet by any change in the posted prices of crudes in the Middle East or in Western Canada. Thus Canadian crudes in mid-1959 would appear to be at a theoretical disadvantage of approximately 35 cents, if pipe line transportation costs of 70 cents per barrel are assumed or approximately 15 cents if pipe line transportation costs of 50 cents per barrel are assumed.

These pipe line transportation costs are based on a number of assumptions, each of which will require examination in the light of the circumstances which prevail when decisions are called for with respect to any particular project. For example, at this time it would seem that the volumes of throughput assumed in the calculations, except those associated with a government-owned line, are somewhat higher than might be absorbed by the Montreal market in the immediate future. The market estimates presented to the Commission suggest that the crude oil requirements of the Montreal refineries will be approximately 210,000 barrels per day in the early 1960's. This compares with 255,000 barrels assumed in the cost calculations. The Montreal refineries have sufficient capacity to process more crude oil than the forecast requirements of the market but to refine much more than 210,000 barrels per day of Canadian crude would probably require them to ship the surplus supply of refined products back into the Toronto area. This would involve them in competition with the Ontario refineries. However, assuming that Canadian field prices had to be reduced to enable Canadian crudes to be marketed in Montreal, such reductions would be reflected in the Toronto refinery area as well as in Montreal, thereby giving the Ontario refineries

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a cost advantage over the Montreal refineries. Presumably it would not be feasible, therefore, for the Montreal refineries to dispose of the probable surplus of products in this manner. Consequently it may be concluded that the Montreal refineries would probably not require the volume of Canadian crude oil assumed in most of the pipe line cost estimates until about 1967. Most of the estimates of pipe line transportation costs presented to the Commission may, therefore, prove to be too low.

It is possible that prospective developments associated with the movement of liquefied petroleum gases produced in oil and gas fields of Western Canada or fuel oils derived from the Athabasca oil sands may lead to the need for an enlargement of pipe line transportation facilities to Eastern Canada. If this were associated with plans for new pipe line facilities to supply crude oil to refineries in both Montreal and Toronto, the increase in volume of throughput resulting from the addition to the pipe line stream of fuel oils and liquefied petroleum gases could improve the economics of a pipe line to Montreal.

It is difficult to assess the possible competitive position of Canadian crudes in the Montreal market in the immediate future. Posted prices of overseas crudes may become more stable after the recent adjustments in world prices or these may be harbingers of further reductions. Ocean tanker rates are at an exceptionally low level at the present time and the level of these rates is important in determining the laid-down cost of foreign crudes in Montreal. The laid-down costs of Venezuela and Middle East crudes in December, 1958, reflected tanker rates in the neighbourhood of USMC minus 40 or lower. The possibility of a change in tanker rates within the next few years was discussed in Chapter 4. It should be noted that a change of 10 percentage points in the USMC rates would add or subtract some 18 cents per barrel to the cost of Middle East oils in Montreal and some four cents for Venezuela oils.

The addition of a market of perhaps 200,000 barrels per day, represented by the added demand of the Montreal refineries, would represent an increase of about 40 per cent over the present level of production in Canada. In the normal course of events, the addition of this market to those already served by the Canadian industry would involve increased reserve requirements and could thus be expected to give rise to a substantial increase in the level of exploration and development in Canada. An important consideration, however, is not only the size of the market but its profitability. The extent to which well-head prices would have to be reduced to reach the Montreal market would also determine, in part, the degree to which it would serve as a stimulus or discouragement to exploration and development.

The Montreal Market

The effect of lower well-head prices on prospective profits, and thus on the incentive to develop further oil reserves, is illustrated in a study prepared by Imperial Oil Limited designed to show the effect of hypothetical reductions in well-head prices of 25 and 50 cents per barrel. The study showed that, on the assumption of a field price of \$2.52 per barrel (the price of Redwater crude in 1957), the future worth of the profit margin, after tax, would be 81 cents but would decline to 64 cents in the event of a reduction of 25 cents in that field price. The net rate of return, depending on the life of the wells and after allowing for a six per cent return on present investment, would then range between 6 and 9 per cent as compared with a range of 7 to 12 per cent if field prices were to remain at \$2.52 for the next 20 or 30 years. A reduction in well-head prices of 50 cents per barrel would reduce the future worth of the profit margin, after tax, to 46 cents and the probable rate of return to a range of 4 to 7 per cent which is, the Company declared, in some cases "actually less than the normal borrowing rate and would not pay the interest costs for the small operator". These calculations are based on average industry costs and, of course, are subject to wide differences between companies and fields. Furthermore they do not make provision for the compensating advantages of an increase in the volume of production. The additional output of some 200,000 barrels per day would obviously serve as an important offsetting factor in these calculations. Among other things the higher production level, by shortening the period needed to repay the capital invested in established reserves, would tend to lower the cost structure of the industry.

The major oil companies on the basis of their forecast of the increased demand in established domestic markets and in export markets were of the opinion that exploration and development would have to be maintained at approximately the same level as that of the past few years in Canada. It was pointed out that increased markets for natural gas as well as the growth of demand for crude oils would tend to maintain this level of investment. They expressed concern that the addition of the Montreal market, together with maximum potential exports to the United States, would confront the industry with the problems associated with a very rapid rate of development. In extreme circumstances, they stated, this might require a level of exploratory drilling twice as high as the 1958 level. While an expansion of production tends to reduce costs, due in large part to the shortening of the time over which the original investment in reserves is recovered, a sudden necessity greatly to intensify exploration and development, it was pointed out, can have the effect of raising finding costs.

Reference was made in Chapter 4 to the improvement in the ratio of production to productive capacity which might be achieved with the growth of

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domestic and export markets. It is questionable, however, whether access to the Montreal market would permanently eliminate the continuing problem of surplus capacity in the oil producing industry of Western Canada. The methods used to regulate the exploitation of oil-bearing lands have a direct bearing on this problem and these are a matter of provincial jurisdiction.

The strong encouragement which some provincial land policies give to oil exploration and development encourages excess productive capacity. These policies are intended to serve other and quite legitimate aims but they can have the effect of continuously forcing the pace of exploration and development. The levels of replacement costs in Western Canada also tend to be higher than they would otherwise be as a result of the practice of giving all producers a share of the available market. In other industries competition tends to eliminate high-cost production and thus to reduce excess production capacity. The understandable concern of provincial governments to ensure the widespread ownership of mineral-bearing lands, the rapid development of new production and the granting of a proportionate share of the market to all producers can contribute to high-cost production.

The methods under which lands are offered for reservation and lease have the effect of requiring producers to develop a field within a given period, even though the current level of production capacity may be greatly in excess of market demand. Prorating arrangements encourage the development of new reserves by giving the newcomer to the industry, among others, a market allowance at the expense of the allowance formerly given to existing wells. Because the total market requirement has to be allocated among all producing wells and every well is given a minimum production allowance, marginal wells and newly-drilled wells in effect are able to produce only because the share of the market assigned to all other wells, including those of the most efficient and low-cost producers, is simultaneously reduced. Under these arrangements even those producers who own a great deal of "shut-in" production, if they are to maintain their share of the market, must also drill and develop new wells on all lands under lease. This inevitably leads to excess producing capacity.

Since the discovery of the Leduc oil field in 1947, Canada's dependence on outside sources for petroleum has declined from some 90 per cent to approximately 40 per cent at the present time. The Canadian economy is sounder because of this development. The climatic conditions of large parts of the country are such as to demand an assured source of fuel for space heating purposes. Canada also shares in the high per capita consumption of energy which is characteristic of the North American continent and petroleum products, particularly in transportation, form a vital element in this use of energy. Petroleum products constitute approximately 54 per cent of all energy supply in Canada.

The Montreal Market

In the United States the requirements of national security have been used to justify the imposition of import quotas on crude oil and products in order to maintain the domestic industry at its optimum level of production. Canada depends on imported crudes and products to a much greater degree than the United States, with such dependence being almost complete in the case of the Province of Quebec and the Atlantic Provinces. It is self-evident that access of Canadian crude to the Montreal market would diminish the economic risks to which this part of Canada would be exposed in the case of any interruption of international supplies. The Commission has not attempted to appraise the probability or otherwise of any such dislocations to supplies in time of peace. In terms of national defence in time of emergency the importance of self-sufficiency in petroleum would depend upon the character of the emergency. The Commission has made no attempt to obtain information or views on these questions and offers no comments beyond saying that, while the problem of ensuring the continuity of supplies in time of emergency would exist in respect of many supplies, petroleum would undoubtedly be one of the most important.

One benefit of the increased production resulting from the supply of the Montreal market by Canadian crude would be that of added revenue to industry and to provincial governments. An increase in production of 200,000 barrels per day would raise the value of the year's output by some \$160 million. Of this, approximately \$20 million would accrue to provincial governments in the form of royalties. This does not include benefits which would accrue to provincial governments through added revenues from land sales and rentals.

The impact on investment resulting from an increased production equivalent to that required to supply the Montreal market would be of great significance to the Canadian economy. Based on discovery and cost experience of the period 1952-58, it is estimated that the addition of a market equivalent in size to the Montreal market would involve expenditures of \$75 to \$100 million per year, of a capital nature, in the producing sector of the industry. This direct capital investment could bring about substantial secondary investment and although the oil producing industry is not a large direct employer of labour, it might be expected that increased activity resulting from the higher rate of production would increase employment in that industry by 15 to 25 per cent, or by 3,000 to 5,000 workers.

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In our first report dated October 22, 1958, we did not deal in detail with the question of the reserves in Canada of crude oil or the problems relating to Canadian and export markets for such oil. We indicated in that report only that Canada clearly had sufficient proven and probable reserves of crude oil to enable it to continue to export crude oil to available markets. As a consequence we recommended that its export be permitted under annual licence. We were addressing ourselves, of course, to the export of crude oil by pipe line and the continuance in existence of the same procedures with respect to such annual licences as had been in effect in Canada for many years pursuant to the Exportation of Power and Fluids and Importation of Gas Act and regulations made thereunder. Under this system of licensing data have been obtained by the Government of Canada and a form of control maintained over the export of a vital source of energy in the early stages of development of the industry. Such licensing would not seem to have had any restrictive effect on the development of the industry, as pipe lines have been built in Canada connecting with pipe lines in the United States and with refineries in both countries.

Our further study of the situation has established beyond doubt, in our opinion, that Canada has ample proven reserves of crude oil to meet domestic requirements and to permit a substantial increase in the volume of exports. Proven reserves of crude oil at the end of 1958 were in excess of 3 billion barrels. With the addition of natural gas liquids, the total liquid hydrocarbon reserves at the end of 1958 were at least 3.6 billion barrels. If Canadian oil were to supply the whole of the petroleum product demand throughout Canada, the proven reserves would suffice for 13 years at the 1958 rate of consumption. However, there is general agreement that Canada's ultimate reserves will prove to be much more substantial.

In the case of natural gas, the need to ensure that domestic requirements for the foreseeable future could be met requires the maintenance of a system of export licences and in our first report we made certain recommendations in this regard. The marketing of crude oil does not give rise to the risk of a future shortage of supplies such as is inherent in the methods used to market natural gas. Commitments for the export of natural gas are made for periods as long as 20 years. It is not the practice in the oil

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industry for commitments involving the purchase of crude oil to be made for any great length of time. Such commitments are usually of a short-term nature.

Having regard to the trends in the discovery and growth of reserves in Canada, future Canadian requirements will not be jeopardized, in our opinion, if exports of crude oil are permitted and encouraged. Consequently, we do not feel that such licensing of exports by pipe line as has heretofore prevailed need now be continued. In an emergency, Canada could take prompt action. At the present time the limitations set by the capacity of the existing pipe lines afford a certain measure of control. Furthermore, the information and data with respect to exports of crude oil previously obtained by the Government by means of this licensing system can be made available to the National Energy Board through the Dominion Bureau of Statistics.

However, it should not be overlooked that the terms and conditions under which Canadian crude or products may be imported into the United States will be very important having regard to the exemption accorded such crude and products from United States import restrictions. Canada may find it necessary to reimpose export licences to ensure that Canadian exports of crude or products to the United States will be in accordance with the terms of the exemption given by the United States to Canadian crude and products.

In the foreword to our first report we stated that:

"During the hearings of the Commission, much testimony was given to it with respect to the possibility of Canadian crude oil being used by the Montreal refineries in substitution, in whole or in part, for the foreign crude oil now used by the Montreal refineries. This problem was not a matter specifically included in the terms of reference to the Commission but because of its importance to Canada, to the oil producing provinces and to the oil industry as a whole and because of its close connection with the problem of export markets for Canadian crude oil, the Commission felt that it could not properly decline to have this problem aired before it."

During these hearings and in our subsequent deliberations, it became apparent to us that it was necessary to study and analyse not only the problems involved in the use of Canadian crude oil in the Montreal refinery area, but also the nature and extent of the existing domestic markets now supplied by Canadian crude and the prospects for and nature of possible export markets. This we have endeavoured to do in this report.

As we have previously indicated, Canada has large reserves of crude oil but they are far from tidewater and landlocked in Western Canada. This crude must move long distances overland in order to reach the most important market areas. Costs of exploration, development and production of crude oil in Canada are, in general, higher than in Venezuela and the Middle East and more comparable to those of the United States. The

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combination of these circumstances puts Canadian crude, in effect, at a disadvantage in world markets and limits possible export markets to the United States.

During the period 1950-57, Canada's crude oil production increased steadily and rapidly from 79,500 to 498,000 barrels per day. In 1958 production declined. In the spring of that year it was at the rate of 400,000 barrels per day and the yearly average was 456,000 barrels per day.

Crude oil exports from Canada remained small until 1954 but during the period 1955-57 they increased from 40,600 to 152,600 barrels per day. Over this period the percentage of exports to total production rose from 11.5 to 30.6 per cent. A significant decline to 86,800 barrels per day, or 19 per cent of production, occurred in 1958.

Oil field activity in Western Canada has involved steadily increasing capital investment. Capital expenditures, which in 1950 were \$54 million, had increased to \$326 million by 1956. This was followed by a decline in 1958 to \$263 million. As a result of the high level of exploration and development activity in recent years, the productive capacity of the industry reached 989,000 barrels per day by 1958. The amount of shut-in capacity has steadily increased to the point where actual production in Western Canada is no more than one-half of productive capacity. Alberta has approximately 90 per cent of the country's shut-in capacity and during early and mid-1958 its industry was operating at little more than one-third of provincial capacity.

All of these factors, namely, the decrease in the rate of production, the loss of exports to the United States and the increase in shut-in capacity, resulted in a desire on the part of certain producers and the Government of the Province of Alberta to secure the only remaining large domestic market not now served by Canadian crude, the Montreal refinery area.

It will be evident from Chapter 5 of this report that there are conflicting views and there is room for considerable difference of opinion on the question of building pipe line facilities to transport western Canadian crude oil to the Montreal refinery area. The Commission realizes that it is natural for the Montreal refiners not to support a project which, in their judgment, is uneconomic at this time. In addition, such a project would result in the loss to their affiliated or parent companies, at least in large measure, of the secure and stable market for their foreign crude represented by that refinery area, with a consequent substantial reduction in sales to them by their parent or affiliated companies. These sales, in the main, are of crude oil produced by these companies under concession in the Middle East or Venezuela. Furthermore, it is "owned" oil as distinct from "prorated" oil and, because of the abundance of reserves and the absence of the same need to replace these reserves compared to the situation in Canada, the

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proceeds of sales are more readily available, than would be the case in Canada, for purposes other than reinvestment in exploration or development.

The fact is that as long as the Montreal refiners are free to import foreign crude oil into that refinery area the building of pipe line facilities to transport Canadian crude to the area could not be financed and would be useless, unless those refiners entered into appropriate throughput or deficiency agreements obliging them to take Canadian crude transported through the pipe line. Certain of these refiners indicated to the Commission they were not prepared under the circumstances that existed at the time of the Commission's hearings to enter into such throughput agreements. It is obvious that were they to do so they would expose themselves to the possibility that some refiner, not now in the Montreal area, might in the future construct refinery facilities there and import foreign crude at a laid-down cost below that of the other refiners whose source of supply would be restricted by reason of the throughput agreements.

It was made clear to us that construction of the necessary facilities for delivery of Canadian crude oil to Montreal by pipe line was not likely to be undertaken in the near future by private enterprise without some form of government action. This is the inescapable conclusion to be drawn from the testimony given to us, both by those who favoured and by those who opposed the transportation of Canadian crude oil to Montreal. It follows that if Canadian crude oil is to be transported to Montreal by pipe line, in the near future, the Canadian Government must either be prepared to take action that will result in the construction of the necessary pipe line facilities or build such facilities with public funds.

The choice between a privately built and owned pipe line and a publicly built and owned pipe line is of importance but is secondary, in the Commission's view, to the more fundamental question, namely, whether it is in the public interest for the Government of Canada to intervene in order to assist in making available additional markets for Canadian crude consistent with the maintenance of a low energy cost to the Canadian consumer and a strong and healthy oil industry. In particular, should the Government intervene to alter the economic forces (if, indeed, they are wholly economic in their nature) which now govern the movement of oil within Canada and across its borders and which presumably do not encourage the maximum use of Canadian crude in domestic markets?

As is natural in the circumstances, those who favour the building of facilities to transport Canadian crude oil by pipe line to Montreal tend to draw attention to the resulting advantages to oil producers in Western Canada and to minimize the possibility of increases in prices to consumers and the possible adverse effects of restricted importations of oil upon Canada's foreign trade. Those who are opposed tend to do the reverse.

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There is no doubt that, under certain circumstances, there would be great advantages to western Canadian producers if they were to obtain, in the near future, the addition of a secure market for some 200,000 barrels of oil per day with the prospect of expansion through normal growth in demand. This volume, however, would replace imports of a similar quantity and, as the construction of pipe line facilities to Montreal to supply that market area in the near future with Canadian crude would require some form of government action, its effects upon Canada's foreign trade relationships, trade balances and matters of this kind become of direct government concern.

Trade policy considerations are beyond the scope of the Commission's enquiry. How much harm would result to Canadian exporters generally by a deliberate reduction in oil imports or what collateral effects there might be on wider issues of international relations and on trade balances, we do not feel called upon to determine. We do, however, recognize that trade policies and other international considerations are involved and must be taken into account if and when imports of foreign crude into domestic markets are restricted by government action in order to enable the construction of pipe line facilities to any such market for the transportation of Canadian crude oil to refiners located therein. In addition, of course, the price structure of petroleum products, the overall advantages or disadvantages to the oil industry of possible further reductions in well-head prices and other considerations of a domestic nature would have to be taken into account.

The proposal to transport crude oil to Montreal raises many of the traditional arguments respecting national policy. What price should Canada be prepared to pay to strengthen the East-West lines of trade and communication? To what extent is it possible for Canada to shape her economic policies, without giving careful consideration to those followed by the United States, having regard to Canada's population, resources and geographical location on the North American continent? Canada is not a natural economic unit. There have always been powerful centrifugal forces of an economic nature tending to separate the nation into regions and it has been necessary that these forces be resisted to some degree in order to build a nation from a group of widely separated regions. Confederation itself involved the construction of a trans-continental railway to link the outlying provinces with the central ones, even though cheaper transportation might have been obtained through the United States. The national policy with respect to natural gas exports, which we affirmed in our first report, recognizes this same underlying principle and there are many other illustrations of it.

The building of the Interprovincial and Trans Mountain pipe line systems for the transportation of crude oil, immense steps forward in the

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evolution of the Canadian economy, involved, certain risks but were the result of private enterprise without government intervention. The Commission is impressed by the fact that many of the arguments submitted in opposition to the construction of pipe line facilities to Montreal could be applied to the Interprovincial pipe line system were it now in contemplation rather than in existence. Indeed, such arguments could also be applied, with perhaps even greater force, to the Trans Mountain pipe line system were it not in existence. It may be doubted whether these pipe line facilities would have been built or extended, as they have been, without some kind of government action if the uncertainties which now exist in the world oil industry and the conditions which now govern and may continue, for some time, to govern production, marketing, pricing and international movement of oil, had been present when the various decisions were made to build and to extend these two systems.

Until the discovery of the Leduc field in 1947 Canada was almost wholly dependent upon imported oil. This dependence was recognized as a serious weakness in our economic fabric. Indeed, the Leduc and subsequent discoveries of crude oil contributed greatly to the reduction of expenditures on oil imports and stimulated the investment of large sums of foreign capital. Oil and natural gas are now available in Canada in abundance. Because gas can at present be transmitted in quantity only through pipe lines, it is not an internationally traded commodity in the same sense as crude oil and because large supplies were required to meet the Canadian demand, it became necessary at an early period to reach a decision on national policy, i.e., to limit exports of gas to the surplus available after providing for all Canadian requirements in the foreseeable future. In our view, the time has come when it is highly desirable for Canada to reconsider and restate its national policy with respect to oil.

It seems clear that if a decision were made to permit the construction of pipe line facilities to transport Canadian crude to Montreal they could be built by private enterprise, under existing conditions, only with the approval and co-operation of the Montreal refiners. A similar situation existed in Vancouver when the Trans Mountain pipe line system was constructed. The financing of its construction was made possible by deficiency agreements. This procedure presumably could be followed with respect to the Montreal refinery area. However, this would place a heavy financial burden on the Montreal refiners and would expose them to the risk of new refineries at Montreal being established in the future by companies with no financial interest in the pipe line facilities and with an incentive to use foreign water-borne crude rather than Canadian crude.

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The need for government action to facilitate the construction of pipe line facilities to Montreal led to a discussion before us of possible types of action, including the imposition of customs duties. In our opinion, a customs duty, the traditional form of protection against imports, would, in itself, be of doubtful value in securing the construction of the pipe line facilities. The vendors of the foreign crude oil to the Montreal refiners might well be prepared to make, either directly or indirectly, substantial reductions in posted prices in order to preserve the Montreal refinery area as a market for their crude oil. It is impossible to estimate how high a duty would be required in order that it might be prohibitive. Furthermore, the imposition of a nation-wide customs duty might have the effect of raising, unnecessarily in our view, the internal cost of a vital source of energy to Canadian consumers. For these and other reasons we do not believe that a customs duty should be applied for the purpose of encouraging the construction of pipe line facilities to transport Canadian crude to Montreal.

There was agreement in general by those who gave testimony to us on the subject that some form of quantitative restrictions on imports would be required for the financing of the construction of such facilities. The implications of any such government action, the lack of export markets in the face of large imports of foreign crude to the eastern seaboard of Canada and the low level of production of the industry have necessitated, in our view, a consideration of what might be Canada's national policy with respect to its oil industry.

Oil is a vital requirement of modern industry and is the most important source of energy in Canada. It accounts for approximately 54 per cent of Canada's present energy supply. Canada must have oil at all times and it is undoubtedly in the national interest that it should at least be in a position rapidly to make itself as independent as possible of imports, which may be subject to interruption. That is one of the reasons why the Leduc and subsequent discoveries of crude oil in Canada have been of such national significance.

It has at times been suggested that a country conserves its resources of crude oil by importing foreign crude and utilizing it instead of domestic production. However, the effect of such imports of foreign crude on exploration for and development of Canada's resources must be considered. The primary ability to make expenditures for exploration and development comes from the actual and anticipated revenues from production. If expenditures on exploration and development are not incurred, the oil reserves may neither be discovered nor developed and therefore would not be readily available for future use. Finding and developing oil fields is a process which commonly extends over many years and, while oil may exist in the ground, it is not

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available to a country until discovered and developed. If imports of foreign crude displace domestic production so that such production suffers from lack of adequate markets, there is bound to be a decrease in the revenues of the industry and a consequent slackening of the incentive and initiative needed for exploration and development.

A healthy, strong and vigorous Canadian oil industry is clearly essential not only from the point of view of its importance to the Canadian economy but because this country should have ample supplies available to enable it if necessary to meet its own requirements as well as to supplement those of other countries which, during an emergency, might be dependent upon North American sources of supply. The present level of production in Canada is low relative to capacity and it is highly desirable that it should be substantially increased. In Chapter 4 we have already referred to the concern of the Canadian Petroleum Association with the situation faced by the industry as expressed in its policy statement issued in April, 1959.

In 1958 Canada imported approximately 45 per cent of its domestic requirements of crude oil and yet had a production potential sufficient to supply more than the whole of its requirements. As a result of this and of the lack of exports the level of production of the industry in Canada was only 47 per cent of its potential production. We are not aware of any other country which could produce all that it needs, has reserves to sustain such a production and which maintained its production at only 47 per cent of its potential, as did Canada in 1958.

The following tabulation illustrates the production, demand and reserve ratios for oil for the United States and Canada for the years 1956-58.

**PRODUCTION, DEMAND AND RESERVE RATIOS IN THE PETROLEUM INDUSTRY
UNITED STATES AND CANADA**

	<i>United States</i>			<i>Canada</i>		
	<i>1956</i>	<i>1957</i>	<i>1958</i>	<i>1956</i>	<i>1957</i>	<i>1958</i>
Potential Production ('000 bbl./day)	9,500	9,700	10,373 ¹	772	905	989
Annual Production ('000 bbl./day)	7,951	7,978	7,506	478	507	463
Actual Domestic Demand ('000 bbl./day)....	8,777	8,818	9,065	718	742	765
Industry Status						
Production/Productive Capacity	84%	82%	72%	62%	56%	47%
Demand/Productive Capacity	92%	91%	87%	93%	82%	77%
Production/Actual Domestic Demand....	91%	90%	83%	67%	68%	61%
Remaining Reserves ('000,000 bbl.)	36,300	36,000	36,700	3,129	3,269	3,650
Life Index (Years Supply)						
Based on Production	12.5	12.4	13.4	17.9	17.7	21.6
Based on Demand	11.3	11.2	11.1	11.9	12.1	13.1

¹ World Petroleum, February 15, 1959.

Source: U.S. Bureau of Mines, Dominion Bureau of Statistics, Canadian Petroleum Association.

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While we realize that comparisons with respect to levels of production between the United States and Canada involve certain reservations, nevertheless we feel that the foregoing tabulation does give an indication of the relative position of the two countries in certain respects. The tabulation indicates that in 1958 the ratio of actual production to potential production in the United States was 72 per cent and in Canada 47 per cent, whereas in the United States the demand for crude was 87 per cent of potential production and in Canada 77 per cent. If one considers the percentage of production to demand, the figures for 1958 are even more significant as between the United States and Canada. In the United States the industry produced 83 per cent of the domestic demand, while in Canada it produced only 61 per cent.

Although we have not included in the tabulation statistics and percentages applicable to the provinces of Alberta and Saskatchewan, it is of significance that in 1958 the level of actual production to potential production in Alberta was 39 per cent and in Saskatchewan 79 per cent.

Crude oil has been found in quantity in Canada only during the past 10 to 12 years. Exploration and development have been relatively intense and, in the result, highly successful. A large potential production has been developed but the demand for such production has not increased at the same rate. It is to be expected, however, that the ratio of production to producibility should be less and the life index of the reserves should be greater than in the United States, where the industry has a record of growth and development over many decades.

The United States has announced a policy designed to maintain a strong and healthy domestic oil industry with a continuing incentive for further exploration and development of reserves in order to achieve as large a measure of national self-sufficiency as possible in the interests of national security.

Canada's need to maintain a healthy oil industry is just as important as is that of the United States and because the producing sector of the Canadian oil industry is still in the early years of development and at a stage where adequate market outlets are necessary perhaps Canada's need to take action is as urgent as was that of the United States, although any such action by Canada does not necessarily need to be the same as that taken by the United States.

There is no doubt that in Canada there is oil in large quantities, but its production is economic only when related to North American markets. Canada has an industry with the skill and access to capital, together with the will and drive to find, develop and produce additional crude oil. If sufficient incentives to do so do not exist, the industry will be faced with a relatively low production and a low cash flow, with all that this means to the industry

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itself, to related industries and to the Canadian economy as a whole, despite the great potential of the industry in terms of undiscovered or shut-in capacity. On the other hand, an expanding oil industry, having strong reserves, able to continue to attract capital and assured of expanding markets, promoting as it will the further economic development of the country, as well as providing a secure supply of such an important source of energy as crude oil, will help to achieve a better balance between the various regions of Canada, will make an important contribution to Canada's trade and will continue to bring large benefits to the Canadian economy.

The problem is how best to increase the level of production of the oil industry in Canada to the point where such production will sustain a strong and healthy industry without adversely affecting the cost of energy to the Canadian consumer. In dealing with this problem, it is desirable to consider what might be done to increase the use of Canadian crude in refinery areas in Canada where it is now used, in whole or in part, and also to consider what prospects now exist for the export of Canadian crude.

The Vancouver refineries are now supplied wholly by Canadian crude oil through the Trans Mountain pipe line system. Nevertheless there is the danger that foreign waterborne crude could move into the Vancouver area or, indeed, that additional amounts of products refined from foreign crude could be imported by consumers or dealers in that refinery area, thereby lowering refinery runs of Canadian crude. While the investment of the Vancouver refiners in the Trans Mountain pipe line system, as well as their ownership of resources of Canadian crude, give an incentive to them to use Canadian crude, nevertheless it would be possible for new refineries lacking such incentive to be established in the area with the intention of importing foreign crude.

The refineries in Ontario are, in large measure, supplied by Canadian crude oil but products refined in Montreal from foreign crude moved into Ontario at the rate of approximately 59,000 barrels per day in 1958. Certain refiners, who control the Trans Northern products pipe line, through which these Montreal refined products are shipped, have indicated that they intend by 1962 substantially to replace these products with the products of Ontario refineries. Canadian crudes are now fully competitive at the Ontario refineries and this programme could undoubtedly be accelerated, resulting in the use of approximately an additional 50,000 barrels daily of Canadian crude in the Ontario refineries in the near future. It is our understanding that sufficient capacity is available through the Interprovincial pipe line system for the transportation of this additional Canadian crude to the Ontario refineries and that spare refinery capacity exists in Ontario to take such crude, although this would involve inter-company exchanges and commercial arrangements of that nature.

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However, this programme could be adversely affected by further declines in the price of overseas crudes. Moreover it must not be overlooked that tanker shipments of foreign crude or of petroleum products refined from foreign crude may, as the result of the opening of the St. Lawrence Seaway, move into Ontario thus reducing the runs of Canadian crude in the Ontario refineries.

In the Maritime Provinces the only existing refinery is in the Halifax area but another is in course of construction at Saint John, New Brunswick. We do not suggest that these refineries could operate on Canadian crude oil transported by pipe line and we do not consider that, under existing conditions, steps should be taken to substitute the running of Canadian crude oil for foreign crude in the refineries in the Maritime Provinces.

It was estimated by the Alberta Oil and Gas Conservation Board (Table XXVI) that Canada's productive capacity in 1959 will be 1,072,000 barrels of crude oil per day. Imperial Oil Limited estimated to the Commission in early July, 1959, that 422,000 barrels per day of crude oil and condensate will be required in 1959 for domestic markets now served by Canadian crude. The Alberta Board estimated that productive capacity in 1960 will reach 1,157,000 and, in 1961, 1,250,000 barrels per day. Imperial Oil Limited estimates that, in 1960, 440,000 barrels per day of Canadian crude and condensate will be required for the domestic markets now served by Canadian crude. If the products produced from 50,000 barrels per day of foreign crude at Montreal were displaced in the Ontario market by an equivalent amount of products refined in the Ontario refineries from Canadian crude, the demand for Canadian oil in the refining centres of Canada, other than in the Montreal area and in the Maritime Provinces, would be of the order of 490,000 barrels per day in 1960. If pipe line facilities existed and Canadian crudes were also used in the Montreal refinery area, production of Canadian crude oil could be close to 700,000 barrels per day in that year, even without exports.

As we have already indicated, the United States is the only presently attainable export market for Canadian crude. The exemption from the United States mandatory import restrictions of crude oil, unfinished oil and finished products entering that country by pipe line, motor carrier or rail from the country of production represents an important change in the attitude of the United States towards Canadian oil and products. While we realize that the many possibilities, problems and implications may not have been fully reviewed as yet, this exemption could be the first step leading towards the development of a continental policy with respect to crude oil, under which Canadian and United States crudes would be freely used in refinery areas

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on the North American continent, supplemented by such imports of foreign crude as might be necessary to augment any shortage of supply from North American sources.

We mention the possibility of a continental policy not because we believe that it can necessarily be developed in the immediate future but because we feel that care should be taken to ensure that Canada, by its actions and commitments now, does not jeopardize the subsequent possible development of such a policy. This presupposes, of course, that the maintenance of a strong oil industry in Canada will not be jeopardized by undue delays in the determination of any such continental policy and that the immediate problems of the industry can be satisfactorily resolved.

The exemption of Canadian crude from United States import restrictions was made effective on June 1, 1959, and we feel that sufficient time has not elapsed to enable any definite opinion to be formed with respect to the effect which the importation of Canadian crude may have on the individual quotas of United States refiners or on the overall quota for imports of other foreign crude in the various administrative districts established in the United States for the purposes of its controls. One interpretation of the regulations leads to the conclusion that such import quotas of United States refiners would be adversely affected, thus reducing their incentive to import Canadian crude.

There is no doubt that exemption from United States import restrictions has improved the prospects for exports of Canadian crude oil to the United States. However, this exemption does not guarantee increasing sales of Canadian crude oil in United States markets. The choice of where it buys is still with the United States refiner. To effect any substantial and stable increase in such Canadian exports, it will be necessary for the Canadian oil industry and for the companies operating refineries in the United States, accessible to Canadian crude, to follow policies which will result in Canadian crude oil being used in these United States refineries, in place of crude oil from other sources, so that Canadian crude will become a continuing source of supply.

As a result of the exemption from import restrictions, Canadian crude is now able, more freely, to compete in United States markets. Nevertheless there are many factors, in addition to price, which affect its market prospects. There would seem to be no question that, on a price basis, Canadian crude is more than competitive with United States domestic crude from California in the Puget Sound area and in California itself even after making allowance for United States customs duty. However, some United States refiners are able to use domestic crude owned by them or their affiliates on which production profits can be realized in addition to refinery profits. Company

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investment in pipe line and other facilities must also be taken into account. Consequently there are factors other than price with which Canadian crude must contend in order to gain a preference over domestic crude in United States markets.

An import quota or permit is a valuable right under the United States import quota system and it seems highly unlikely that Canadian crude will supplant other foreign crude which can be imported by refineries in the United States under the quotas they may hold from time to time. Refiners in the United States presumably have a strong interest in maintaining outlets in the United States for their own overseas production and it is hardly to be expected that they would prefer to use Canadian crude in their refineries before exhausting all means, by direct imports and by exchanges (commonly referred to in the industry as "swaps" or "switches"), of utilizing concession crude from foreign countries in which they or their affiliates have heavy capital investments. Consequently we would expect quotas to import overseas oil to be fully utilized in preference to imports from Canada.

As already pointed out, well-head prices of Canadian crude oil are no longer based on the laid-down cost of Illinois crude at Sarnia, Ontario. Simultaneously with a reduction in the transportation charges for crude oil over the Interprovincial pipe line system, well-head prices in Canada were reduced early in 1959 in order to maintain the competitive position in Ontario of products refined from Canadian crude. This has had the effect of reducing the prices of Canadian crude substantially below the prices at which such crude would be competitive with United States domestic crudes in certain United States refining areas. The change in the method of determining well-head prices in Canada illustrates the fact that the Canadian oil industry is exposed to the world price of crude oil at a time when there is a world surplus of crude.

Conditions of uncertainty and over-production in the world oil industry are likely to continue for some years and world oil prices may decline further. If they do and the reduction is substantial and is reflected in lower well-head prices for Canadian crude oil, the results could be very serious for the Canadian industry. In view of the difference between exploration, development and other industry costs in Canada and those in Venezuela and the Middle East, a well-head price that would still be satisfactory in Venezuela or in the Middle East could, if reflected in Canadian well-head prices, be highly injurious to the Canadian industry.

A continuously increasing volume of exports to United States markets requires stability and continuity on the part of the policies of the United States and of Canada with respect to oil. Pipe line facilities to serve the West Coast area of the United States with Canadian crude already exist, as do

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facilities for the present supply of Canadian crude to the Middle West area. The present capacity of the facilities serving the West Coast area are sufficient to support a greatly increased volume of exports to this area. Additional pipe line facilities and extensions of existing refineries or new refineries would be necessary substantially to increase exports to the Middle West area. This would involve large new investments and time would be required before such facilities would become available. In order to justify the expenditures required to create these facilities, it would in all probability be necessary for the importers of Canadian crude to commit themselves for a relatively long period of time. If United States import policy and Canadian export policy are not stable, the large investments required for facilities to enable export of Canadian crude oil to be increased substantially could not be justified and presumably would not be forthcoming.

The demand for crude oil in the markets of the northern area of the United States from the West Coast to the Great Lakes is of the order of 1,500,000 barrels per day or almost double the total present demand for crude oil for all of Canada. Consequently, even normal growth in demand in this area offers a large potential market for Canadian crude and in our opinion no steps should be taken at this time which might lessen Canada's ability to capture and secure a substantial share of the growth in demand in this large market area.

In our hearings, a majority of the companies which appeared before us emphasized that the most economic markets for Canadian crude oil were the West Coast, Middle West and Great Lakes areas of the United States but they contended that Canadian crude oil was having difficulty entering these markets because of United States import restrictions. These import restrictions have since been removed but, as we have previously mentioned, this, in itself, does not mean that Canadian crude will move in expanding volumes to United States export markets. Energetic steps must be taken by Canadian oil companies, in conjunction with their international affiliates, to ensure that Canada will be able fully to enjoy the benefit of the exemption accorded to it by the United States.

The Canadian oil industry should now be expected to pursue, in the national interest, a vigorous policy of promoting the export of Canadian crude oil into these and other areas, so that Canadian crude can establish itself as a continuing source of supply in United States markets in sufficient volume to enable the industry in Canada to expand and maintain a high level of production. This, in effect, implies that the initiative substantially to increase the level of production of Canadian crude oil through exports will be left to the oil industry itself and that the oil companies will, in the

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national interest of Canada, have an opportunity to take full advantage of the recent action of the United States in exempting Canadian crude oil and products from its import restrictions.

Our review of domestic and export markets, present and potential, for Canadian crude oil has led us to the conclusion that if there were an effective national policy ensuring the use of Canadian crude in domestic markets, now accessible by pipe line, and encouraging the use in those markets of products refined from Canadian crude, and if Canada were successful in the immediate future in substantially increasing its exports of crude oil to the United States, the production of Canadian crude could be maintained at a level adequate to sustain a strong industry and to provide the incentive for further exploration and development.

We have in mind a target level of production by the end of 1960 approximating 700,000 barrels per day. Thereafter, the normal growth in demand in domestic markets now served by Canadian crude, together with expanding exports which the industry with intensive efforts should be able to secure, would increase this level of production. If the exploration for further reserves should prove to be highly successful the industry should expect the ratio of production to producibility to decline. The essential point, in our judgment, is that the level of production should be such as will sustain the industry as a healthy and vigorous one and that the industry itself should seek and capture export markets which, with the normal growth in domestic markets accessible by pipe line, will be sufficient for this purpose.

It should be possible to achieve this level of production of approximately 700,000 barrels per day by the end of 1960 and to increase it thereafter by ensuring the utilization of Canadian crude in the Canadian refinery areas accessible by pipe line and by vigorous and imaginative steps by the oil industry to secure a larger share of present and future United States markets. In our opinion the industry should be given an opportunity to develop those markets and make them secure for Canadian crude.

We believe that if and so long as it is demonstrated by the efforts of the industry that these basic assumptions as to domestic and foreign demand are justified, it is neither necessary nor desirable to take action to secure the Montreal refining area as an outlet for Canadian crude. Moreover, we believe that a decision to impose restrictions in order to secure the Montreal market, if made before the potentialities of United States markets were fully exploited, would, among other things, seriously impair Canada's ability to secure those markets, might prejudice Canada's position vis-à-vis existing United States import restrictions and might jeopardize the development of a continental oil policy.

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Having regard to the international associations of the refiners in Montreal and in the Maritime Provinces and to the large shut-in capacity of crude oil in Western Canada, in which most of these refiners have substantial ownership, it is our view that these refiners should be prepared to strive assiduously to offset their imports of foreign crude by exports to United States markets. These refiners should be prepared to work out private commercial arrangements with their suppliers or affiliated companies or with other companies which have a large stake in Canadian oil production and could utilize Canadian crude in United States refineries. Some Montreal refiners have already made such arrangements but the level of exports which they and other refiners could achieve by intensive efforts of the industry in our opinion has not yet been attained. Those Montreal refiners which have already made arrangements of this nature with respect to certain volumes of Canadian crude and which own crude oil resources in Canada should be able to increase these volumes. Those Montreal refiners, which have not already done so, should be expected to effect arrangements of this nature, the quantities involved depending upon the volume of their imports, the extent of their crude oil resources in Canada and their affiliations and connections with United States oil and refining companies.

The prices of Canadian oil would not be an impediment to such arrangements and they should be attractive, particularly if the United States importer, through an affiliated or associated company, gets a corresponding outlet for foreign crude in Canada. We believe there is no real reason, therefore, for either the Canadian importer, the foreign supplier of the Canadian importer or the United States refiner who could use Canadian crude not to enter into such commercial transactions.

We are conscious of the fact that in order to ensure the maximum possible utilization of Canadian crude in the refinery areas in Canada now served by such crude that a system of licensing of imports of crude oil may have to be put into effect. So far as we are aware at the present time foreign crude is not interfering with the use of Canadian crude in the refinery areas in Canada to which such crude can be transported in adequate volumes by existing pipe line facilities. We have pointed out, however, that this might occur. If it does, then, in order to ensure the maximum utilization of Canadian crude in those refinery areas, it may be necessary to license imports of crude oil and to deny such licences (except for some good and sufficient reason) to any refiners in a refinery area where adequate pipe line facilities, now or hereafter, exist for the transportation of Canadian crude oil to meet the demands of that refinery area. This licensing system could be imposed on a nation-wide basis or made applicable only to one or more refinery areas as the circumstances might require.

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This system of licensing, if imposed on a nation-wide basis, would apply to imports of crude oil into all refining areas of Canada but would only involve restrictions on imports where pipe line facilities are in existence for the transportation of Canadian crude to any such area. It would, for example, restrict imports of crude oil into the Toronto and Vancouver refining areas where such pipe line facilities now exist. It would restrict imports of crude oil into the Montreal refining area only if and when pipe line facilities have been constructed to transport Canadian crude to that refinery area. There is no present prospect that it would ever restrict imports into the Maritime Provinces.

Canada's imports of crude oil come from the Caribbean area and from the Middle East. Practically no United States domestic crude is imported. In fact, in 1958 United States crude oil was imported at the rate of only 3,800 barrels per day, and this represented 1.3 per cent of total imports, as 98.7 per cent came from other producing areas. We see no necessity, under existing conditions, to contemplate licensing the importation of crude oil produced in the United States and if a licensing system is brought into effect we would recommend that such imports be exempted if that is possible, having regard to Canada's international commitments. We assume that the present import restrictions in the United States would not permit exchanges to be made within the industry which would allow overseas oil to be imported into that country in substitution for United States domestic crude exported to Canada. Furthermore, Canada would have a measure of control through its jurisdiction over the construction of any pipe line facilities in Canada designed to transport such crude from a border point.

As we have already stated, the United States imposes a customs duty of 10.5 cents per barrel on imported crude oil. Whether in the interests of a continental oil policy this duty could be eliminated, with respect to Canadian crude, whether the exemption from United States import restrictions could be extended to coastal tanker shipments of Canadian crude and products or whether Canada should impose a like customs duty on imports of foreign crude, we express no opinion. These are some of the matters, however, which should be considered in the development of any continental oil policy.

We have not attempted to set out the details with respect to a licensing system because we realize that exceptions might be required for certain types of crudes and that problems of a technical nature may be involved. At the present time, for example, and presumably for some years to come, certain types of petroleum products will have to be imported into Canada to balance refinery runs and to meet seasonal variations in demand. We are of the view that the oil industry itself is able to supply any necessary information and to assist in the resolution of whatever administrative difficulties may arise in

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putting into effect such licensing procedure. The National Energy Board, as a permanent body of the Government of Canada, provides a forum where the industry can discuss its problems at the Canadian government level. What is perhaps of more importance, this Board as an agent of the Government can and should keep in close touch at all times with the industry, in all its phases, and with its problems, as these have a bearing upon the prosperity of the Canadian economy and of the industry itself. Consequently, we believe that the problems involved in such licensing procedure can and should be resolved through discussions between that Board and the industry itself.

This system of licensing would lay the foundation for the building of pipe line facilities to transport Canadian crude to Montreal, if and when it becomes necessary and desirable that they should be built. Once it has been declared to be national policy that Canadian crude should supply the Montreal refinery area, any group interested in constructing the pipe line facilities would be in a position to organize a company and apply to the National Energy Board for a permit to proceed because the group would know that, when such facilities existed, refiners in the Montreal area would be denied an import licence for foreign crude, to the extent that their proportion of Canadian crude can be transported through such pipe line facilities. It would then be the responsibility of that Board to deal with any such application in the light of all the relevant circumstances.

We wish to point out that in the absence of a licensing system such as we have indicated, the Montreal refiners or any one of them are in a position to block any plans for the use of Canadian crude in the Montreal refining area and no pipe line facilities for such purpose could in fact be built without their approval and co-operation. In other words, in our opinion, if it should become advisable to move Canadian crude to Montreal in order to maintain a healthy oil industry in Canada, then a licensing system involving restrictions on the importation of overseas oil would be necessary.

A system of throughput agreements, supported by licensing of imports and assurance of supply, should be sufficient to attract the necessary capital. One theoretical risk would be that a future government or Parliament could decide to change the licensing system and permit the establishment of refineries which would have no obligation to take a share of Canadian crude through the pipe line, although this would be so manifestly discriminatory as to be most unlikely. We have mentioned assurance of supply because we believe that this would enable the facilities to be financed in the most economical manner. This would involve appropriate arrangements with or declarations of policy by provincial government authorities in the producing

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provinces of Western Canada to ensure that the Canadian crude to be used in Montreal would be made available to the refiners in sufficient volume and at fair and equitable prices.

The Commission has not considered it necessary to reach any definite conclusion as to the route which a pipe line to Montreal should follow, if one is to be built. The choice of the route would depend upon many factors. If the economic factors involved, such as the throughput of the line and the demand for Canadian oil transported through its facilities should justify the building of a new pipe line from Western Canada, an all-Canadian route would have certain advantages. Such a route would ensure that the pipe line would always remain under Canadian jurisdiction, including rate or tariff regulation. It would mean also that no part of it or of the oil which moved through it would be subject to the jurisdiction of any taxing authority, other than in Canada. Furthermore, looking to the future, the selection of an all-Canadian route could mean the construction of refinery and other facilities in areas where they do not now exist and thereby contribute to the development of the regions of Canada through which it would pass. On the other hand, to insist upon an all-Canadian route as a matter of policy, if the financing of the line were left to private enterprise, might involve the Government of Canada in a situation similar to that which, in the case of the West-East movement of natural gas, was encountered by reason of the decision that the route of the natural gas pipe line should be an all-Canadian one. Similarly, the choice of route would be affected by the prospect or otherwise of its supplying, in whole or in part, export market areas in the United States. If an oil pipe line were built by government, it would presumably be imperative that it should follow an all-Canadian route.

If it were determined that the demand, in whole or in part, for crude oil in the Montreal refinery area should be met by Canadian crude, the economy in unit transportation costs of a modern large-diameter pipe line should be carefully considered. In reaching any decision account should be taken of the anticipated reduction in the demand of the Montreal refiners for crude oil over the next few years, after giving effect to the maximum possible utilization in the Ontario market of products refined in that province from Canadian crude, as presently proposed by certain Ontario refiners. In any case the Montreal refiners would be obliged to continue to import certain crudes or additional petroleum products. Consequently, careful consideration should be given not only to the route to be followed by any such pipe line facilities but also to the possibility of any markets which these facilities might serve in addition to the Montreal refinery area. Furthermore, the effects of any action taken to ensure the building of such pipe line facilities on the sub-

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stantial investment in the existing Interprovincial pipe line system should not be overlooked. Care should be taken that this investment is not put in jeopardy.

We do not consider that the same need may arise in the near future to license the importation into Canada of products refined from foreign crude oil as we have indicated may arise with respect to overseas crude oil. Importation of petroleum products has an effect on the determination of the price to the Canadian consumer of products refined from Canadian crude and any restriction on such imports, other than the existing restriction by way of customs duty, could disturb the pricing structure of petroleum products in Canada. However, it is quite possible that as time goes on licensing of petroleum products may be required to ensure the full implementation of any policy along the lines which we have stated we believe to be in the national interest.

We believe that, if the national policy which we recommend is adopted, the Canadian oil industry should enjoy immediately and in subsequent years a higher rate of production than would be possible by a decision at the present time to supply the Montreal refinery area with Canadian crude, a decision which, in any event, could not be implemented before 1962. We are assuming and, of course, would expect that the industry, after its initial efforts in bringing up the level of production by capturing sufficient domestic and export markets, would continue to expand the production of Canadian crude in line with the growth of sales outlet possibilities in both the domestic and export markets.

Our proposals are designed primarily to afford to the industry an opportunity to increase the level of production of Canadian crude and thereby to sustain a healthy and vigorous Canadian industry. They leave open the question of supplying the Montreal market with Canadian crude in the event of failure of efforts to assure a continuing adequate level of production. The Montreal question can still be considered and a decision made in the light of the later circumstances. In the meantime, the industry will have enjoyed, with a minimum of interference or action by the government, a level of production which it would otherwise not have been able to attain.

To summarize, the Commission recommends:

- (1) That it be national policy
 - (a) to encourage and permit the export of Canadian crude oil without licence, and
 - (b) to ensure the continued use, consistent with the interests of the Canadian consumer of petroleum products, of Canadian

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crude in refinery areas of Canada accessible to it by existing pipe line facilities, thereby increasing the market outlets for such crude oil.

(2) That to implement such national policy the oil companies concerned take steps as soon as possible to displace, with products refined from Canadian crude, a volume of petroleum products now moving into the Ontario market from the Montreal refinery area equivalent to approximately 50,000 barrels daily of crude oil.

(3) That to implement further such national policy the Canadian oil industry take vigorous and imaginative action very substantially to enlarge its markets in the United States on a basis that will ensure the continuing participation of Canadian crude in these markets and in their expansion.

(4) That no Government action should at this time be taken to ensure the construction of pipe line facilities to transport Canadian crude oil to the Montreal refinery area and that before any such action is taken an opportunity be given to the oil industry to demonstrate that it can find markets elsewhere in Canada and the United States sufficient to sustain a healthy and vigorous Canadian oil industry with the incentive for further exploration and development.

(5) That, if Government action should become necessary to implement the national policy we have recommended above, imports of crude oil be made subject to licence and that such licences be denied (except for some good and sufficient reason) to refiners in a refinery area in Canada where adequate pipe line facilities exist for the transportation of Canadian crude oil to meet the demands of such refinery area, but that crude oil imported through a pipe line or by motor carrier or rail and produced in the country from which such crude oil is imported be exempted from such licensing.

In making these recommendations, we do not wish to imply that if they were accepted and implemented the problems of the producers of crude oil in Western Canada will be at an end. On the other hand, we believe that the interests of Canada and of such producers, if the industry accomplishes what we believe it can and should accomplish, particularly with respect to increasing the level of demand for exports to United States markets, will be better served both immediately and in the future than if a decision were now made to facilitate by Government action the construction of pipe line facilities for the transportation of Canadian crude to the Montreal refinery area. If the industry takes the necessary and imaginative steps, the next 12 to 18 months should suffice to make it apparent whether or not the production of Canadian crude can be raised to the desired level. We suggest that the National Energy Board should be requested to keep this

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situation under review as well as the question of supplying Canadian crude oil to the Montreal refinery area in the light of the circumstances as they may from time to time develop.

The history of the industry in Canada since the discovery of the Leduc field in Alberta in 1947 shows that some sections of the industry have directed greater efforts towards the finding and production of oil than to considerations of markets. It is only within recent months that world conditions in the industry have emphasized the importance of expanding markets simultaneously with the proving and development of reserves. It is highly desirable that the full extent of Canada's reserves of crude oil be established as soon as possible. We suggest, however, that the appropriate authorities in each producing province should be urged to keep their policies and regulations concerning exploration and development under constant review, in order that development may proceed in as orderly a manner as possible in relation to available markets for Canadian crude.

Low cost energy has been and will remain a vital factor in the Canadian economy. Policies designed to encourage the development of the Canadian oil industry should, in our view, always take this factor into consideration having regard particularly to Canada's growing industrial development and its dependence on foreign markets.

ALL OF WHICH WE RESPECTFULLY SUBMIT FOR YOUR EXCELLENCY'S
CONSIDERATION

Henry Borden

Chairman

J. Louis Leary

George E. Britnell *

Robert D. Howland, **

Henry Labner

R. M. Hardy ***

J. F. Parkinson

Secretary

July 20, 1959

* Dr. G. E. Britnell has signed the Report subject to the reservations set forth in the Memorandum which follows immediately.

**An addendum by Dr. R. D. Howland appears at page 155.

***An addendum by Dr. R. M. Hardy appears at page 156-158.

Memorandum of Reservations

by G. E. BRITNELL

I agree with most of the analysis presented in Chapters 1 to 5 of the foregoing Report and, except for one qualification noted below, with the recommendations of the Commission as set out at the end of Chapter 6. My reservations arise from the emphasis given to certain matters of analysis and appraisal in Chapter 6. I think there is a tendency to view the prospects of the oil-producing industry in terms much more gloomy than the circumstances warrant and to assume too quickly that problems of foreign competition should be met by governmental intervention in the form of import restrictions. At the same time, the treatment seems to lack what I conceive to be an adequate appreciation of the serious problems which would result from any governmental action designed to reserve the Montreal market for Canadian crude oil or to protect the Canadian oil industry against the effects of competition from imports in the domestic markets already served by it.

On the first point I feel that Chapter 6 sounds a note of urgency and of warning concerning the present position of the oil-producing industry which is scarcely compatible with the analysis of the industry's quite favourable future prospects presented in earlier chapters. References to the low level of production in the industry seem to me to be somewhat exaggerated, bearing in mind the improvement in production and markets which has already begun to take place and which is forecast to continue for the next decade and to be especially marked during the next three years. The diagnosis of the problems of the industry does not emphasize sufficiently the fact that the reverse which it encountered in 1958 and the early part of 1959 took place at the end of a decade of extremely rapid growth, characterized by a rate of development which could hardly be expected to continue unchecked indefinitely. The special impetus to the expansion of the Canadian oil-producing industry given by the Suez crisis and the subsequent return to more normal conditions in the world supply and demand situation was bound to be reflected in a sudden rise followed by a temporary reduction in imports into the United States from Canada. In addition, the general economic recession in the United States in 1958 naturally included the oil industry and was accompanied by the application of import restrictions against Canadian and other imported oils, the operation of which also served to reduce the demand for Canadian crude. Some of these adverse factors have, however, already disappeared and in recent months demand, both export and domestic, has improved to the point where Canadian oil production has regained the average annual level achieved during the peak year of

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the Suez crisis. Furthermore, as an earlier chapter of the Report indicates, there is every prospect that the growth of domestic and export markets will, in the course of the next few years, permit a production of crude oil in Western Canada at least 50 per cent greater than the record level of 1957. Indeed, it seems quite likely that the present rate of production will be at least doubled by 1967. In other words, the short-term production prospects of the industry are probably substantially better than those which most other Canadian resource industries can reasonably anticipate. Just, therefore, as one swallow does not make a summer, the temporary market reverses of Canadian oil producers in 1958 can hardly be taken to indicate a languishing, let alone a declining, industry.

The rather depressing picture of the Canadian oil-producing industry presented in Chapter 6 seems to be very largely the result of preoccupation with recent changes in the ratio of actual to potential production in Western Canada. Such a comparison inevitably tends to magnify the difficulties of the industry. To correct this emphasis it is necessary to point out that it is perfectly natural that a comparatively new and enterprising oil industry—and one which was subjected early in its development to the stimuli arising out of the Suez crisis—should develop excess producing capacity. It should also be emphasized that the methods used by provincial authorities to foster the development of oil reserves, although justifiable on other grounds, tend to force the pace of drilling without regard to the growth of markets. Yet surely it should not be assumed, as the general tone of Chapter 6 seems to suggest, that it is the responsibility of the Government of Canada continuously and at almost any cost to find new markets to absorb a steadily expanding capacity to produce crude oil. Such a precedent could be expected to encourage claims by many industries for similar treatment. The resulting high-cost economy would be prejudicial to the interests of both the Canadian consumer and Canadian export industries. Nevertheless, having said this, it is relevant to observe that the growth of domestic and export markets for Canadian oil as forecast in the report and as supported by most authorities in the industry can be expected to ensure a substantial improvement in the ratio of production to producibility over the next few years, even if some of the measures recommended by the Commission are not carried out.

For these reasons it seems to me that Chapter 6 also attaches too great a note of urgency to the importance of gaining access for Canadian crude to the Montreal refinery area in the near future and pays insufficient attention to the difficulties that might result from such a course if it were to be attempted in face of the uneconomic features which characterize the project under existing circumstances. The arguments in favour of reserving

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the Montreal market for Canadian crude are presented extensively and, although the Report recommends against any immediate action to achieve this objective, the general tenor of the concluding chapter leaves the impression that steps should certainly be taken to market Canadian crude in Montreal before very many years have passed.

I do not feel that the problems which this course would give rise to are made sufficiently explicit. I am not referring to the disturbances which government intervention of the kind envisaged would create in terms of Canada's trading policies, although I attach much more significance to this factor than the Report does. I refer, rather, to the simple, economic disadvantages of the proposal. The plain fact is that, in normal circumstances, the oil-producing industry will obtain a higher price for its output if it concentrates upon the markets already served by it in Canada and in the adjacent regions of the United States than if, with support of government, it directs its efforts toward the more distant market of Montreal. In overstressing the need for more secure markets and for high-volume markets the Report pays too little attention to the importance of achieving the optimum possible rate of return on every barrel of oil produced so as to ensure the most economical use of the nation's resources. The search for new markets should take account of the need to obtain an adequate price at the well-head so as to provide a continuing incentive to search for the larger reserves that will be needed to provide for expanding markets. Under present economic conditions, as indicated in Chapter 5, Canadian crude oil could not be laid down in Montreal except at a substantial reduction in well-head prices, or at the cost of introducing a full-fledged system of protection. I would therefore regard it as uneconomic and unwise to take the steps necessary to market Canadian crude in Montreal, irrevocable as these would be, until the possibility of finding equally large alternative markets in the United States had been thoroughly tested over a considerable period of time.

In this connection I disagree with the view expressed in the Report that the period of testing such export prospects should be limited to the next year or two and that, failing a very substantial increase in the exports of crude oil to the United States serious consideration should then be given to the steps by which the Government of Canada would ensure the displacement of overseas crude by Canadian crude in Montreal. I agree fully with the view that those responsible for export sales have an obligation to make more strenuous efforts than have so far been made to work out arrangements with United States refineries which will permit export sales to increase, but I feel that the experience of a year or two would be altogether too short a period on which to base major decisions of policy that would have such momentous significance for the future well-being of this important industry.

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By the same token, I feel that the overwhelming concern of the Report with the need for a rapid improvement in production by 1960 or 1961, rather than with the long-term prospects of the industry, is quite unwarranted.

It seems to me that the concluding chapter of the Report tends to assume much too readily that, with any increase in the intensity of import competition, the oil industry will have to be protected by government. On this point it should, perhaps, be noted that the Commission was not appointed to investigate the need for protecting existing domestic markets and received no evidence on the subject. It is true, of course, that increases in the world surplus of oil have resulted in lower prices for petroleum in world markets and have brought about a 6 per cent decline in field prices in Western Canada. This may be unfortunate but need not be regarded as a major set-back. Admittedly, any very substantial decline in world prices would create problems for the Canadian oil-producing industry. As the Report suggests, however, the industry has not yet lost any of its domestic markets to imports. Yet the Report tends to assume that the industry is incapable of defending its markets within Canada from any further increase in competition and that any intensification of import competition will have to be met by import restrictions. These assumptions seem to me to be based implicitly on the presupposition that there is little or no scope for any reduction in prices or costs in the various sectors of the oil industry and that this latter method of defending the industry's markets against import competition, which is normal for most other resource industries, is virtually non-existent in the case of the oil industry. The Report gives insufficient attention to the fact that the probable consequences of any increase in foreign competition would not be a substantial increase in the volume of imports, but rather a downward pressure on petroleum prices, which could affect refinery margins and field prices. There is insufficient evidence to support the inference that no reduction in prices, profit margins or costs can possibly be sustained by the oil industry. Other resource industries have to face foreign competition at home and abroad and to accommodate themselves to changing conditions of competition. It is much too early to conclude that an industry as new and as resourceful as the Canadian oil industry cannot maintain and improve its competitive position without governmental intervention.

It also seems to me that the analysis in Chapter 6 does not emphasize sufficiently that the expansion of the Canadian oil-producing industry must depend, in the long run and for the most part, upon the growth of export markets and that to achieve such markets the cost of producing crude oil and petroleum products must be kept competitive, not only with potential imports, but with the prices at which petroleum from other sources is available to the United States refining industry which provides our only

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export market. The stress laid on the need to reserve existing domestic markets and, ultimately, the Montreal market for Canadian crude, by means of import restrictions and at the cost of a price structure higher than the world price structure, appears to neglect this all-important consideration. It needs to be emphasized most strongly that reservation of the Montreal market for Canadian crude, if it involves protecting the structure of Canadian prices against the influence of world prices, would be very much a second-best solution to the problems of the industry. If the Canadian oil-producing industry is to grow satisfactorily in future decades it must find continuously expanding markets in the United States. The full potentialities for such expansion can only be realized if the forces making for efficient and low-cost production are permitted to operate freely. Under a system of import restrictions, however, the incentive to eliminate marginal and inefficient production would steadily disappear, as would appear to have happened in the United States.

Frequent references to the similarity between the economics of oil production in Canada and the United States and to the need for maintaining a level of petroleum prices in Canada more comparable with that of the United States, as well as references to the desirability of a continental oil policy, all seem to me to reflect a lack of awareness of the fact that, because of the Canadian producing industry's need to export, it simply cannot afford to model its policies on those of its United States counterpart. The United States oil-producing industry has virtually lost its ability to compete in outside markets. At the same time the United States has found it difficult to maintain a satisfactory ratio of reserves to production. For this reason it has been thought necessary to keep field prices high in order to increase exploratory drilling even in marginal areas. Policies of protection designed to permit high-cost production to continue in the United States are therefore based upon conditions which find no parallel in Canada. So far as the Canadian oil industry is concerned, there is absolutely no necessity to foster marginal or high-cost production and policies having this result could only serve to reduce the ability of the industry to sell its crude oil in the export market. I conclude, therefore, that what may be good policy for the United States is not necessarily the path of wisdom for Canada.

I must now admit to some possible reservations arising out of that part of the first recommendation of the Commission which suggests that it should be national policy "to ensure the continued use, consistent with the interests of the Canadian consumer of Canadian petroleum products, of Canadian crude in refinery areas of Canada accessible to it by existing pipe line facilities". I take this to mean that it is desirable that the major oil companies should continue to use only Canadian crude in British Columbia

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and that the present plan of the industry to fill the Ontario market with products refined only from Canadian crude in Ontario should not be postponed or abandoned. Since the intentions of the industry in this respect are soundly based I see no reason to believe that they will not be carried out. I would not, however, wish it to be inferred that in supporting this recommendation I would favour the use of import quotas or tariffs on imported crudes or products to ensure that no increase in imports was allowed to take place, at least in circumstances comparable to those which exist today. My own feeling is that, assuming no drastic decline in the world price of crude oil, there is little likelihood that overseas crudes will seriously invade the Ontario and British Columbia markets for Canadian crude and that nothing short of a very serious decline in world prices, giving rise to a substantial displacement of Canadian by overseas crudes or products, should be considered sufficient justification for measures to protect these markets. It is quite conceivable that the demand for Canadian crude in these two regions might be temporarily reduced from time to time as a result of seasonal increases in imports of refined products. I would not regard such a situation as abnormal and as requiring the adoption of a complete system of quantitative restrictions on imports—which is a conclusion that might conceivably be drawn from a literal interpretation of the first recommendation—unless the Government of Canada were to find that imports had reached or were likely to reach a very substantial level and unless it were satisfied that the oil industry was quite incapable of meeting this competition by reducing prices. This conclusion goes back to the point made earlier to the effect that proposals for the protection of the domestic market may well involve protection for the existing price and profit structure.

In implying that the Montreal market should, in the relatively near future, be reserved for Canadian crude and that domestic markets such as Ontario and British Columbia should, by means of government intervention, be maintained solely for Canadian crude or Canadian refined products, the Report tends to obscure the fact that the achievement of either of these objectives would, under present circumstances, probably involve the imposition of a full-fledged system of government controls. Absence from the Report of any extended analysis of the many difficult administrative and economic problems which would arise from government intervention of this nature is, therefore, regrettable. I accordingly propose to mention very briefly some of the problems that would almost certainly emerge. In the first place the government would have to impose an impressive, extensive and detailed array of quantitative controls over the import of petroleum in any form. Import quotas would have to be allocated among the various refining and marketing companies engaged in or likely to become engaged in the

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business of importing crude oil and petroleum products. Quotas would have to be restricted to amounts which would enable the companies concerned to meet their "normal" market requirements but which would not permit them to extend their markets at the expense of competitors. Thus, for example, refiners and dealers in the Maritime Provinces would be allotted import quotas of crude and of refined products calculated to be sufficient to supply their normal markets. It would be necessary, however, sternly to deny them the right to import additional amounts of crude oil or refined products which might enable them to extend their markets into, say, the Province of Quebec, where they would encounter the competition of products made from Canadian crude. In other words, a system of import quotas would "freeze" the existing marketing position of the various companies and individuals engaged in refining crude oil or in marketing refined products. It would also raise the problem of finding room for new entrants to any branch of the industry. Consequently, such a system would seriously limit the freedom of competition and the flexibility of the oil industry while its administration would almost inevitably give rise to claims of inequity as between individual companies and as between various regions of Canada.

A system of quantitative import restrictions would further have the effect of completely insulating the price structure of petroleum products in Canada from import competition. This would leave the way clear for the development of a system of "administered" prices, the setting of which would be determined by the few large oil companies which in Canada tend to dominate the business of refining and marketing. But these companies also own and produce the greater part of the petroleum produced in Western Canada. At the present time import competition, or at least the threat of import competition, serves to check any tendency which may exist towards the operation of monopolistic or oligopolistic practices. With the competition of imports removed it is difficult to believe that the establishment of well-head prices by refiners would continue to take place under conditions of "arms-length" negotiations. It is more logical to expect that prices would be maintained at levels much higher than would prevail were imports free to compete. It is not unreasonable to anticipate that, in these circumstances, the Government of Canada might find it necessary ultimately to control and regulate the prices of both crude oil and products. In so doing, the government would become directly or indirectly responsible for the determination of profit margins at the refineries and in the marketing sector of the oil business and, perhaps of even more significance, for the determination of well-head prices. I would suggest that the Canadian Government should not lightly embark upon a course which might easily lead to widespread government regulation of an industry which is quite capable of adjusting itself to the fluctuations of domestic and world markets.

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The danger that import restrictions would lead to higher prices and hence to the possibility of price control was recognized and stated by the Government of the United States at the time of the imposition of mandatory controls. In view of the relatively smaller number of major oil companies in Canada as compared with the United States and the fact that a very small number of major oil companies in Canada are responsible for more than half the total production of crude oil—a situation quite different from that obtaining in the United States—it would seem reasonable to assume that with any significant restriction in imports the need for further government controls would be likely to arise more quickly in Canada than in the United States. Restriction of imports into Canada should, then, be contemplated only as a last resort and only if the Canadian oil-producing industry is faced by an unavoidable and substantial increase in imports and is simultaneously unable, for reasons beyond its control, to develop adequate export markets. But let us not deceive ourselves. Montreal would be a relatively small compensation for the loss of a great export market in oil. The political and economic price would be paid by the Canadian consumer, Canadian export industries and the underdeveloped countries—some of them sterling area countries—from which our present oil imports are drawn.

SASKATOON, August 6, 1959.

Addendum to Second Report

by ROBERT D. HOWLAND

I agree with the recommendations made at the end of Chapter 6 of the Report but I find it necessary to indicate some concern about the general purport of the Chapter. I recognize that any attempt to present in summary and mutually acceptable form the multiple and sometimes conflicting facets of a complex problem is likely to result in degrees of emphasis being placed on some of those facets which are unsatisfactory to any one individual. In my opinion, however, some of the economic factors associated with the presentation of the earlier chapters of the Report might have been more fully analyzed and brought to bear on the discussion in Chapter 6. The seriousness of the omissions may be reduced in this instance by reason of the nature of the general conclusions and recommendations of the Commission.

Nevertheless, Dr. Britnell's observations on the tenor of Chapter 6 and certain points of analysis which he introduces in his Memorandum regarding the issue of the Montreal market seem to me to be pertinent. I concur with his remarks insofar as they reflect a broader analysis of the issues which must be taken into consideration in determining the question of marketing Canadian crude in the Montreal market and to the extent that they tend to emphasize the danger of basing such long-term policy on an analysis of problems which might prove to be short-term in nature.

The conditions facing the oil industry have changed considerably even within the brief existence of this Commission and important variables of the problems which we had under review are peculiarly indeterminate at the present time. For example, it is particularly difficult to assess the prospects of future exports to the United States. It is no less difficult to assess the probable behavior of international prices of crude oil and petroleum products and hence to determine the competitive situation which will confront the Canadian oil industry in maintaining and expanding its domestic markets.

Until recently the Canadian oil industry has enjoyed a period of rapid expansion. There is therefore little experience on which to judge its ability to accommodate itself to significant changes in economic circumstances. In view of this and of the uncertainties mentioned above, one is hardly warranted at this time in taking either an optimistic or pessimistic view of the industry's prospects. These considerations appear to me to reinforce the Commission's conclusion that there is a need for a continuing objective study of the situation. Only through such a process will it be possible to determine the wisdom or otherwise of Government action to ensure the marketing of Canadian crude in the Montreal market.

OTTAWA, August 12, 1959.

Addendum to Second Report

by R. M. HARDY

I am in agreement with the analysis, conclusions and recommendations set forth in the Second Report of the Commission, but I feel there are certain aspects of the overall situation in the Canadian petroleum industry that require greater emphasis than has been given to them in the Report. These, in my judgment, are of particular importance in forming an opinion as to the extent to which the Government of Canada should properly concern itself with the operations of the industry.

Evidence placed before the Commission made it quite clear that the economics of the international petroleum industry is extremely involved. This appears particularly to be the case in connection with the marketing of oil, and is due partly to the very fact that operations of the major companies are on a world wide scale. In addition, in practically all of the major oil producing areas of the world, the national government exerts an unusually high degree of influence and control over the industry as compared to what is commonly encountered in other international industries. As a result, international trade in crude oil and petroleum products is far from being a simple matter of availability of supply and competition of price.

The Second Report of the Commission draws attention to the fact that circumstances have existed in recent months where Canadian crude has been unable to take over a foreign market area even though, on the basis of posted prices and availability of supply, it had an apparent economic advantage over any alternative source of oil. The fact is that the economic principles governing the operations of the international petroleum industry may work to the advantage of a particular producing area in competition with other sources of supply which would appear to have a price advantage. There is evidence that the Canadian petroleum industry has benefited from this situation in certain market areas in Canada at the same time that it functioned to its disadvantage in other markets. In addition to these corporate considerations, there are, of course, possible actions by foreign governments that may directly influence the availability of markets for Canadian oil.

The crucial factor, however, is that in such situations decisions may be made which adversely affect the well being of the Canadian petroleum industry and the Canadian national economy in general, and the facts of the

Addendum to Second Report

matter are, that at the present time, the pertinent decisions may be made without reference to the best national interests of Canada. Surely, in these circumstances, it is a proper function of government to intervene to insure that, to the maximum extent possible, the national interests of Canada are protected.

I wish therefore to emphasize, that if the recommendations of the Commission concerning a national policy for the marketing of Canadian oil are to be effective, the Government of Canada must come forward with a strong, clearly defined policy. Moreover the responsibility and procedures for implementing it must be clearly set out. To do otherwise will merely perpetuate the present situation in which the national interest in petroleum matters is left to the mercy of considerations which may be irrelevant to the best interests of the Canadian economy.

On the highly controversial question of the Montreal market, I am in complete agreement with the conclusions of the Second Report of the Commission that no Government action should be taken at this time to ensure the construction of pipe line facilities to transport Canadian crude oil to the Montreal refinery area, and that before any such action is taken an opportunity be given to the oil industry to develop elsewhere markets sufficient to sustain a healthy and vigorous Canadian oil industry; but that the National Energy Board keep this situation under review. I also am in agreement with the suggestion of the Commission that the next 12 to 18 months should suffice to prove whether or not Canadian oil can gain access to its naturally economical markets in the United States in adequate volume. Further, I consider that the proposed target level of production for the Canadian petroleum industry of approximately 700,000 barrels per day by the end of 1960 is a realistic figure. However, it is also my opinion that if this level of production is to be achieved it will require strong support from the Government of Canada in the form of a firm and positive statement of the national policy.

I do not hold the view that the Montreal market is an economically impractical substitute for markets in the middle west and western areas of the United States, and that it therefore should be relegated to the distant future as a means of contributing to the solution of the problem of marketing Canadian crude oil. The data submitted to the Commission on the cost of transporting Canadian crude oil to Montreal, in my judgment, indicate that it is a very real and practical alternative to markets in the United States if these cannot be effectively penetrated. Moreover, I do not hold the view

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that the implementation of a national policy to assist in the marketing of Canadian crude oil will inevitably involve complete government control of the petroleum industry in Canada. The international petroleum industry traditionally is strongly dedicated to the private enterprise system. Evidence submitted to the Commission made it clear that without question the Canadian industry would conform to a stated national policy to the best of its ability. There is, then, every reason to believe that the industry would fully co-operate in the implementation of a strong national policy based on the best interests of the Canadian economy.

EDMONTON, August 14, 1959.

The Orders in Council

P. C. 1957-1386

Certified to be a true copy of a Minute of a Meeting of the Committee of the Privy Council, approved by His Excellency the Governor General on the 15th October, 1957.

The Committee of the Privy Council have had before them a report from the Right Honourable John George Diefenbaker, the Prime Minister, representing:

That, in as much as Canada has within its boundaries large sources of energy in the form of gas, oil, coal, water and uranium, the increasing need of energy for the growing industrial requirements of Canada renders it of the greatest importance to assure the most effective use of those resources in the public interest;

That it is desirable that an investigation be made now into a number of questions relating to sources of energy in order to assist in determining the principles and procedures to be applied in the administration of certain aspects of energy policy which fall within the jurisdiction of the Parliament of Canada; and

That it is desirable that a suitable form of organization be devised to ensure that present and future Canadian requirements for energy are taken fully and systematically into account in granting licences for the export of energy or sources of energy.

The Committee, therefore, on the recommendation of the Prime Minister advise that:

Henry Borden, Esquire, C.M.G., Q.C., of the City of Toronto,
J. Louis Levesque, Esquire, of the City of Montreal,
George Edwin Britnell, Esquire, of the City of Saskatoon,
Gordon G. Cushing, Esquire, of the City of Ottawa,
Robert D. Howland, Esquire, of the City of Halifax, and
Leon J. Ladner, Esquire, Q.C., of the City of Vancouver

be appointed Commissioners under Part I of the Inquiries Act, to enquire into and make recommendations concerning:

- (a) the policies which will best serve the national interest in relation to the export of energy and sources of energy from Canada;
- (b) the problems involved in, and the policies which ought to be applied to, the regulation of the transmission of oil and natural gas between

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provinces or from Canada to another country, including, but without limiting the generality of the foregoing, the regulation of prices of rates to be charged or paid, the financial structure and control of pipeline corporations in relation to the setting of proper prices or charges, and all such other matters as it is necessary to enquire into and report upon, in order to ensure the efficient and economical operation of pipelines in the national interest;

- (c) the extent of authority that might best be conferred on a National Energy Board to administer, subject to the control and authority of parliament, such aspects of energy policy coming within the jurisdiction of Parliament as it may be desirable to entrust to such a Board, together with the character of administration and procedure that might best be established for such a Board;
- (d) whether, in view of its special relationship to the Northern Ontario Pipeline Crown Corporation and the nature of its financing and control, any special measures need be taken in relation to Trans-Canada Pipe Lines, Limited in order to safeguard the interest of Canadian producers or consumers of gas; and
- (e) such other related matters as the Commissioners consider it necessary to include in reporting upon those specified above.

The Committee further advise:

1. That the establishment of the Commission and the conduct of its enquiry shall not in any way delay or postpone the continuation of negotiations or of consideration, whether within the International Joint Commission or otherwise, relating to waters crossing the international boundary and the development of electric energy therefrom in the best interests of Canada, or any other matter coming within the jurisdiction of the International Joint Commission, but the Commissioners may comment or report upon any aspects of these matters and of policy relating thereto that they consider to be relevant to the questions referred to them;

2. That the Commissioners be authorized to exercise all the powers conferred upon them by section 11 of the Inquiries Act and be assisted to the fullest extent by government departments and agencies;

3. That the Commissioners adopt such procedure and methods as they may from time to time deem expedient for the proper conduct of the enquiry and sit at such times and at such places in Canada as they may decide from time to time;

Appendix A

4. That the Commissioners be authorized to engage the services of such counsel, staff and technical advisers as they may require at rates or remuneration and reimbursement to be approved by the Treasury Board;
5. That the Commissioners report to the Governor in Council; and
6. That Mr. Henry Borden be Chairman of the Commission.

(Sgd) R. B. BRYCE
Clerk of the Privy Council.

P. C. 1958-58

Certified to be a true copy of a Minute of a Meeting of the Committee of the Privy Council, approved by His Excellency the Governor General on the 13th January, 1958.

The Committee of the Privy Council, on the recommendation of the Right Honourable John George Diefenbaker, the Prime Minister, advise that Dr. R. M. Hardy, Dean of the Faculty of Engineering of the University of Alberta, be appointed a member of the Commission appointed under the Inquiries Act, pursuant to Order in Council P. C. 1957-1386 of 15th October, 1957 (Energy Policies).

(Sgd) R. B. BRYCE
Clerk of the Privy Council.

P. C. 1957-1473

Certified to be a true copy of a Minute of a Meeting of the Committee of the Privy Council, approved by His Excellency the Governor General on the 13th November 1957.

The Committee of the Privy Council, on the recommendation of the Right Honourable John George Diefenbaker, the Prime Minister, advise that Joseph Frederick Parkinson, Economic Adviser, Department of Finance be appointed Secretary of the Royal Commission constituted by Order in Council P. C. 1957-1386 of 15th October, 1957 (Energy Policies).

(Sgd) R. B. BRYCE
Clerk of the Privy Council.

Royal Commission on Energy

P. C. 1957-1574

Certified to be a true copy of a Minute of a Meeting of the Committee of the Privy Council, approved by His Excellency the Governor General on the 22nd November, 1957.

The Committee of the Privy Council, on the recommendation of the Right Honourable John George Diefenbaker, the Prime Minister, advise that Major N. Lafrance, of Ottawa, be appointed Assistant Secretary of the Royal Commission constituted by Order in Council P. C. 1957-1386 of 15th October, 1957 (Energy Policies).

(Sgd) A. M. HILL
Asst. Clerk of the Privy Council.

Appendix B

Commissioners

Henry Borden, C. M. G., Q.C., *Chairman*
J. Louis Levesque
George Edwin Britnell
Robert D. Howland
Leon J. Ladner, Q.C.
R. Macdonald Hardy

COMMISSION STAFF

<i>Secretary</i>	<i>Assistant Secretary</i>
J. F. Parkinson	N. A. Lafrance

COUNSEL

<i>General Counsel</i>	<i>Assistant Counsel</i>
A. S. Pattillo, Q.C., Toronto	M. H. Patterson, Calgary

ADVISERS

R. L. Hearn, D. Eng., P. Eng., Toronto
R. Bruce West, Vice-President, A. E. Ames & Co., Limited, Toronto
J. C. Sproule & Associates, Calgary

ASSISTANTS

Ralph B. Toombs, of the Department of Mines and Technical Surveys,
Ottawa
G. W. Green, of the Department of Trade and Commerce, Ottawa
M. F. Bélanger, of the Department of Finance, Ottawa.

Hearings

Public hearings were held in the following cities:

Calgary	February 3-28, 1958
	April 29 to May 16, 1958
Regina	April 14-17, 1958
Victoria	April 21-24, 1958
Winnipeg	May 21-22, 1958
Toronto	July 2-10, 1958
Montreal	July 14-22, 1958

Submissions

Submissions received at public hearings

Department of Mines and Minerals, Province of Alberta
Mr. Floyd K. Beach
Oil and Gas Conservation Board, Province of Alberta
The City of Calgary
Canadian Western Natural Gas Company Limited and
Northwestern Utilities Limited
Canadian Petroleum Association
Westcoast Transmission Company Limited
Pacific Northwest Pipeline Corporation and
El Paso Natural Gas Company
Jefferson Lake Sulphur Company
Alberta and Southern Gas Co. Ltd.
Trans-Canada Pipe Lines Limited
The City of Edmonton
The Alberta Gas Trunk Line Company Limited
The British American Oil Company Limited
Northern Natural Gas Company
Amurex Oil Co., Bailey Selburn Oil & Gas Ltd., Banff Oil Ltd.,
Canadian Export Gas Ltd., Canadian Husky Oil Ltd., Canadian
Superior Oil of California, Ltd., Dome Exploration (Western) Limited,
Great Plains Development Company of Canada Ltd., Medallion
Petroleums Limited
Canadian-Montana Pipe Line Company
The Government of the Province of Saskatchewan
Woodley Canadian Oil Company
The Coal Operators Association of Western Canada and
The Western Coal Utilization Council
Producers Pipelines Ltd., and
Westspur Pipe Line Company
Consolidated Mining & Smelting Co. of Canada, Ltd.
British Columbia Electric Company Limited
Trans Mountain Oil Pipe Line Company
The City of Prince George and
Prince George Gas Co. Ltd.
Act Oils Limited

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Hon. E. C. Manning, Premier, The Government
of the Province of Alberta
Canadian Devonian Petroleum Limited, Canadian Homestead Oils
Limited, Canpet Exploration Ltd., Colorado Oil & Gas Ltd.,
Consolidated East Crest Oil Company Limited, Consolidated Mic
Mac Oils Ltd., Home Oil Company Limited, Medallion Petroleum
Limited, Merrill Petroleum Limited, Okalta Oils, Limited,
Westburne Oil Company Ltd., Western Decalta Petroleum Limited
Interprovincial Pipe Line Company
Shell Oil Company of Canada Limited
Imperial Oil Limited
McCull-Fontenac Oil Company Limited
Triad Oil Co. Ltd.
Canadian Oil Companies, Limited
Mr. W. J. Levy and Mr. M. Lipton
Crow's Nest Pass Towns Committee
The Research Council of Alberta
Royalite Oil Company Limited
West Maygill Gas & Oil Limited
Texaco Exploration Company
Mobil Oil of Canada Ltd., and
Pan American Petroleum Corporation
The California Standard Company
The Government of the Province of Manitoba
Trans-Prairie Pipelines Ltd.
Saskatchewan Coal Operators
Hudson Bay Mining and Smelting Co., Limited
The Great Plains Gas Company Limited
Stone & Webster Canada Limited
Hon. Leslie M. Frost, Prime Minister, The Government of the
Province of Ontario
Ontario Fuel Board
The Consumers' Gas Company
Independent Pipeline Company
Mr. Gilbert Jackson
Cities Service Oil Company Limited
Mr. Cyril T. Young
BP Canada Limited
Canadian Bechtel Limited
National Coal Association, Washington, D.C.
Canadian Commercial Coal Dock Operators Association

Sun Oil Company Limited
Canadian Petrofina Limited
Irving Oil Company Limited
Canadian Husky Oil Ltd.
Montreal Pipe Line Company Limited
United Electrical Radio and Machine Workers of America, (UE)—
Canadian Section
Union Gas Company of Canada Limited
Department of Mines, Province of Nova Scotia
Mid-Continent Pipelines Limited
Canadian Devonian Petroleums Limited, Canadian Homestead Oils
Limited, Consolidated East Crest Oil Company Limited, Consolidated
Mic Mac Oils Ltd., Home Oil Company Limited, Merrill Petroleums
Limited, Okalta Oils, Limited, Westburne Oil Company Ltd.,
Western Decalta Petroleum Limited
The Quebec Gasoline Retailers and Garage Operators'
Association Inc.

Other submissions received

Calgary Power Ltd.
Town of Peace River, Town of High Prairie, Town of McLennan,
Town of Falher, Village of Girouxville, Village of Donnelly
Professor Eric J. Hanson
Northland Utilities Limited
Lloydminster Petroleum Association
Hon. Hugh John Flemming, Premier of New Brunswick
Fisheries Association of B.C.
The Board of Trade of the City of Toronto
Lambton Gas Storage Association
The Canadian Manufacturers' Association
Oil Heating Association
The Canadian Chamber of Commerce
The Government of Saskatchewan
Liquifuels Limited
The Government of British Columbia
Weaver Coal Company
Quebec Natural Gas Corporation
Trans-Northern Pipe Line Company
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New York State Natural Gas Corporation
Civic Action League

An Historical Series of Canadian Petroleum Statistics

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Table R — Sources of Imports of Refined Petroleum Products, 1950-1958.

Supply and Demand Trends

Table S — Canadian Supply and Demand Oil Balance, 1956-1958.

Table T — Supply and Demand of all Oils, 1952-1958.

Table U — The Relative Importance of Oil as a Source of Energy in Canada, 1945-1958.

Comparative Crude Oil Prices

Table V — Some Alberta, United States, Venezuela and Middle East Crude Oil Prices, 1946-1959.

TABLE A — ESTIMATED PROVED REMAINING RESERVES OF LIQUID HYDROCARBONS IN CANADA, AT YEAR END, 1951-1958

(In 35 Imperial gallon barrels which are equivalent to 42 U.S. gallon barrels)
(thousands of barrels)

	1951	1952	1953	1954	1955	1956	1957	1958
CRUDE OIL								
Northwest Territories	27,100	26,767	26,442	26,172	53,707	53,258	52,858	52,409
Alberta and British Columbia	1,328,000	1,526,389	1,624,496	1,928,479	2,169,985	2,391,778	2,363,026 ¹	2,581,568
Saskatchewan	21,000	124,247	182,159	222,365	236,872	358,693	420,457	497,372
Manitoba	500	2,106	10,890	29,127	45,211	42,005	34,258	27,500
Total Western Canada	1,376,600	1,679,509	1,843,987	2,206,143	2,505,775	2,845,734	2,870,599	3,158,849
Ontario and New Brunswick .....	.....	.....	1,435	1,471	3,759	3,636	3,855	7,055
TOTAL CRUDE OIL	1,376,600	1,679,509	1,845,422	2,207,614	2,509,534	2,849,370	2,874,454	3,165,904
NATURAL GAS LIQUIDS	11,348	65,374	198,126	208,331	247,085	279,934	394,660	484,193
TOTAL LIQUID HYDROCARBONS IN CANADA	1,387,948	1,744,883	2,043,548	2,415,945	2,756,619	3,129,304	3,269,114	3,650,097

¹ These reserves do not reflect any increases that might be attributed to the liquid injection scheme in the Pembina field.

Source: Canadian Petroleum Association.

Appendix E

**TABLE B—CANADIAN PRODUCTION OF CRUDE PETROLEUM, BY PROVINCES,
1930-1958**

Year	New Brunswick		Ontario		Manitoba		Saskatchewan	
	'000 bbl.	'000 \$	'000 bbl.	'000 \$	'000 bbl.	'000 \$	'000 bbl.	'000 \$
1930	6.8	17.4	117.3	235.7	.....	.....	.....	.....
1935	13.0	18.2	165.0	346.2	.....	.....	.....	.....
1940	22.2	31.2	187.6	397.1	.....	.....	.....	.....
1945	30.1	42.4	113.3	268.5	.....	.....	14.4	15.4
1950	17.1	24.0	250.7	892.0	.....	.....	1,041.1	1,134.8
1951	15.6	21.8	197.2	677.9	10.7	26.5	1,249.3	1,659.0
1952	14.2	19.9	191.8	641.0	104.8	229.3	1,696.5	2,256.4
1953	14.7	20.6	299.7	994.8	653.5	1,714.8	2,797.9	3,833.1
1954	13.0	18.3	412.5	1,391.7	2,148.2	5,619.6	5,422.9	8,183.3
1955	12.5	17.6	525.5	1,599.3	4,145.8	9,618.2	11,317.2	18,318.0
1956	16.6	23.3	593.4	1,958.1	5,786.5	13,633.1	21,077.4	36,253.1
1957	19.4	27.2	623.7	2,160.0	6,089.7	15,467.9	36,861.1	79,325.1
1958 ¹	15.4	21.6	770.9	2,606.0	5,900.0	14,475.6	46,500.0	100,905.0

	Alberta		British Columbia		Northwest Territories		Total Canada	
	'000 bbl.	'000 \$	'000 bbl.	'000 \$	'000 bbl.	'000 \$	'000 bbl.	'000 \$
1930	1,398.2	4,780.7	.....	.....	.....	.....	1,522.3	5,033.8
1935	1,263.5	3,102.2	.....	.....	5.1	25.6	1,446.6	3,492.2
1940	8,362.2	10,694.4	.....	.....	18.6	37.3	8,590.6	11,160.0
1945	7,979.8	13,169.7	.....	.....	345.2	136.3	8,482.8	13,632.3
1950	27,548.2	82,216.5	.....	.....	186.7	352.7	29,043.8	84,620.0
1951	45,915.4	113,870.2	.....	.....	227.4	399.9	47,615.6	116,655.3
1952	58,915.7	139,512.4	.....	.....	314.2	379.2	61,237.2	143,038.2
1953	76,816.4	193,761.6	.....	.....	316.7	257.3	80,898.9	200,582.2
1954	87,713.9	228,319.2	.....	.....	369.9	345.0	96,080.4	243,877.1
1955	113,035.0	274,901.2	.....	.....	404.2	1,185.8	129,440.2	305,640.1
1956	143,909.6	353,629.2	148.5	302.4	449.4	762.8	171,981.4	406,562.0
1957	137,492.3	355,555.1	340.9	763.7	420.8	294.6	181,847.9	453,593.6
1958 ¹	112,300.0	281,536.1	519.0	1,008.0	471.0	475.0	166,476.3	401,027.3

¹ Preliminary estimate.

Source: Compiled by Commission staff from Dominion Bureau of Statistics data.

Royal Commission on Energy

TABLE C — WESTERN CANADA
RESERVES AND PRODUCTION OF CRUDE OIL
1950-1958
(in thousands of barrels)

<i>Year</i>	<i>Proved Remaining Reserves as at December 31st</i>	<i>Production</i>	<i>Life Index Years</i>	<i>Percentage Withdrawal¹</i>
1950	1,202,600	28,378	42.4	2.36
1951	1,376,600	47,402	29.0	3.44
1952	1,679,509	61,037	27.5	3.63
1953	1,843,987	80,580	22.9	4.37
1954	2,206,143	95,578	23.1	4.33
1955	2,505,775	128,903	19.4	5.14
1956	2,845,734	171,372	16.6	6.02
1957	2,870,599	181,171	15.8	6.31
1958	3,158,849	164,740	19.1	5.21

¹The percentage withdrawal relates the annual production to remaining reserves at the end of the year.

Source: Canadian Petroleum Association.

ALBERTA

TABLE D — TRENDS IN THE GROWTH OF POTENTIAL PRODUCTION
ACTUAL PRODUCTION AND RECOVERABLE RESERVES OF OIL AND CONDENSATE

Year	Recoverable Virgin Reserves (MM Bbls.)	Remaining Recoverable Reserves (MM Bbls.)	Annual Production (MM Bbls.)	Cumulative Production (MM Bbls.)	Potential Production (MB/D)	Actual Production (MB/D)	Per Cent Annual Production of Production Remaining Rec. Reserves	Per Cent Annual Production Potential
1946	157	72	7	85	18	18	9.72	100
1947	271	180	6	91	18	18	3.33	100
1948	613	512	10	101	29	29	1.95	100
1949	1,046	925	20	121	79	54	2.16	68
1950	1,248	1,100	27	148	146	74	2.45	51
1951	1,520	1,326	46	194	203	126	3.47	62
1952	1,810	1,557	59	253	264	161	3.79	61
1953	2,245	1,915	77	330	317	211	4.02	67
1954	2,605	2,187	88	418	343	240	4.02	70
1955	3,034	2,503	113	531	492	310	4.51	63
1956	3,641	2,966	144	675	684	393	4.86	57
1957	3,926	3,114	137	812	756	376	4.40	50
1958	3,947 ¹	3,022 ¹	113	925	793	311	3.74	39

¹ Includes Estimated Condensate Reserves.

Source: Alberta Oil and Gas Conservation Board.

Royal Commission on Energy

TABLE E — SUMMARY OF WELLS DRILLED IN WESTERN CANADA
1953-1958

	<i>British Columbia</i>	<i>Alberta</i>	<i>Saskatchewan</i>	<i>Manitoba</i>	<i>Northwest Territories</i>	<i>Western Canada</i>
1953						
Oil .....	....	811	340	67	....	1,218
Gas	20	159	22	....	....	201
Dry	19	455	315	25	6	820
Total	39	1,425	677	92	6	2,239 ¹
1954						
Oil .....	....	683	391	206	....	1,280
Gas	15	134	24	....	....	173
Dry	12	376	344	103	6	841
Total	27	1,193	759	309	6	2,294
1955						
Oil	1	1,137	549	270	....	1,957
Gas	12	135	20	....	1	168
Dry	23	348	343	91	5	810
Total	36	1,620	912	361	6	2,935
1956						
Oil	7	1,347	784	191	4	2,333
Gas	34	134	12	....	....	180
Dry	16	375	312	63	3	769
Total	57	1,856	1,108	254	7	3,282
1957						
Oil	8	874	853	117	....	1,852
Gas	43	135	16	....	....	194
Dry	43	441	358	108	4	954
Total	94	1,450	1,227	225	4	3,000
1958						
Oil	11	870	498	61	....	1,440
Gas	15	168	17	....	....	200
Dry	49	512	275	31	9	876
Total	75	1,550	790	92	9	2,516

¹ Wells drilled increased steadily from a total of 300 in 1947.

Source: Canadian Petroleum Association, Statistical Yearbook, 1958.

Appendix E

TABLE F—EXPLORATORY AND DEVELOPMENT FOOTAGE DRILLED
IN WESTERN CANADA, 1947-1958

Year	Exploratory Drilling (Feet)	Development Drilling (Feet)	Total (Feet)
1947	*	*	1,089,112
1948	*	*	1,814,560
1949	*	*	3,344,885
1950	*	*	4,602,263
1951	*	*	6,038,342
1952	3,556,723	5,156,110	8,712,833
1953	3,796,741	5,343,211	9,139,952
1954	3,991,813	5,167,489	9,159,302
1955	3,978,114	8,737,680	12,715,794
1956	4,405,607	11,056,911	15,462,518
1957	4,974,340	9,034,403	14,008,743
1958	4,183,228	8,211,301	12,394,529

* Breakdown not available.

Sources: Provincial Governments and the Canadian Petroleum Association.

TABLE G—PROVINCIAL GOVERNMENT REVENUES FROM LAND SALES,
RENTALS AND PRODUCTION ROYALTIES, 1947-1958

Year	Alberta	Saskatchewan ¹	Manitoba
	\$	\$	\$
1947	1,329,740	.....	.....
1948	6,539,988	.....	.....
1949	28,057,273	.....	.....
1950	49,697,330	45,246	.....
1951	39,485,267	197,196	.....
1952	53,206,475	657,083	14,449
1953	60,182,708	1,857,830	56,507
1954	108,920,509	4,939,426	268,859
1955	108,956,114	4,480,393	885,532
1956	133,052,550	7,859,805	983,079
1957	134,359,861	18,097,156	906,951
1958	105,440,360 ²	21,329,956 ²	.....³

¹ Fiscal Year ending March 31.

² Preliminary estimate.

³ Not yet available.

Source: Provincial Governments.

Royal Commission on Energy

TABLE H — CAPITAL INVESTMENT IN THE CANADIAN PETROLEUM AND NATURAL GAS INDUSTRY, 1947-1959
(millions of dollars)

Year	Capital Investment in Canada								
	Exploration	Extraction	Transportation	Processing	Marketing		Petroleum and Natural Gas		All Industries
					Oil	Gas	Industry		
1947		9.5	2.6	25.7	14.9	2.5	55.2	2,419.0	
1948		37.3	4.3	32.6	9.7	3.8	87.7	3,151.0	
1949		45.0	7.7	21.6	11.3	4.3	89.9	3,491.0	
1950		53.9	55.0	24.1	16.7	6.6	156.3	3,815.0	
1951		72.1	10.7	50.9	18.1	6.8	158.6	4,577.0	
1952	59.8	101.6	97.6	61.8	25.0	6.3	352.1	5,285.0	
1953	59.1	107.2	79.5	66.8	36.7	11.2	360.5	5,841.0	
1954	55.1	126.8	65.1	92.4	46.3	9.7	395.4	5,620.0	
1955	67.4	201.6	46.0	105.8	56.5	9.4	486.7	6,350.0	
1956	73.7	252.4	177.1	89.6	68.5	46.6	707.9	8,024.0	
1957	77.3	237.8	310.1	116.0	74.9	69.8	885.9	8,717.0	
1958 P	63.7	199.7	235.6	142.9	68.2	88.9	799.0	8,417.0	
1958 F	59.7	216.8	50.0	132.3	92.5	75.4	626.7	8,321.0	
Total	515.8	1,661.7	1,141.3	962.5	539.3	341.3	5,161.9	74,028.0	
Percentage	10.0	32.2	22.1	18.6	10.5	6.6	100.0	.....

P — Preliminary.

F — Forecast.

Notes: Figures shown are capital expenditures on construction and on machinery and equipment. Prior to 1952 capital expenditures in the exploration category were included in the extraction sector. The amounts shown in the marketing category for oil are those expenditures made principally for oil company outlets whereas the gas expenditures relate to natural gas distribution.

Source: Dominion Bureau of Statistics, General Assignments Division.

Appendix E

TABLE I—ESTIMATED EXPENDITURES OF THE PETROLEUM AND NATURAL GAS INDUSTRY IN WESTERN CANADA¹ FOR THE PERIOD 1951-1957
(thousands of dollars)

	<i>Alberta</i>	<i>British Columbia</i>	<i>Saskat- chewan</i>	<i>Manitoba</i>	<i>Total</i>
<i>Acquisition Costs</i>					
Land Acquisition and Rentals	487,300	24,100	119,800	25,200	656,400
Geological and Geophysical	377,700	32,800	53,300	6,700	470,500
Exploration Drilling	380,400	33,900	80,800	15,200	510,300
	<u>1,245,400</u>	<u>90,800</u>	<u>253,900</u>	<u>47,100</u>	<u>1,637,200</u>
<i>Development Costs</i>	666,300	6,900	169,800	36,400	879,400
OPERATION OF WELLS	250,900	200	30,800	7,200	289,100
TOTAL	<u>2,162,600</u>	<u>97,900</u>	<u>454,500</u>	<u>90,700</u>	<u>2,805,700</u>

¹ Estimated, using as sources the expenditures published by the Provincial Governments of Alberta, Saskatchewan and British Columbia. The estimate for Manitoba has been computed on the basis of wells drilled, geophysical activity and a land survey. Well operation costs for other provinces are estimated to be the same per barrel as Alberta. Expenditures in the Northwest Territories and the Yukon Territory are not included. The estimates shown do not take account of expenditures on pipe lines and natural gas plants.

Source: Canadian Petroleum Association.

TABLE J — INVESTMENT IN THE PETROLEUM PRODUCING INDUSTRY IN RELATION TO PRIVATE AND PUBLIC INVESTMENT IN CANADA,

1948-1959

(in millions of dollars)

Year	Primary Industries ¹					Total	Utilities	Trade, Finance and Commercial Services	Housing	Institutional Services and Government Departments	Total
	Total	Crude Petroleum and Natural Gas Industry ²	Manufacturing Industries								
1948	529	37	579	551	281	682	529	3,151			
1949	622	45	536	678	294	768	593	3,491			
1950	697	54	502	720	397	845	654	3,815			
1951	820	72	793	900	412	821	831	4,577			
1952	878	161	973	1,159	344	826	1,105	5,285			
1953	928	166	969	1,209	526	1,084	1,125	5,841			
1954	809	182	822	1,124	582	1,178	1,105	5,620			
1955	999	269	947	1,099	561	1,499	1,245	6,350			
1956	1,306	326	1,394	1,724	611	1,575	1,414	8,024			
1957	1,246	315	1,479	2,308	690	1,430	1,564	8,717			
1958 ³	997	263	1,082	2,135	693	1,781	1,729	8,417			
1959 ⁴	1,001	277	1,043	1,844	799	1,728	1,906	8,321			
CUMULATIVE											
TOTAL	10,832	2,167	11,119	15,451	6,190	14,217	13,800	71,609			

¹ Primary Industries include Agriculture, Fishing, Forestry, Mining, Quarrying, Petroleum and Natural Gas and the Construction Industry.

² Exploration and extraction only; does not include investment in transportation, processing or marketing.

³ 1958 Preliminary.

⁴ 1959 Intentions.

Source: Compiled by Commission staff from Department of Trade and Commerce data.

TABLE K — THE OIL INDUSTRY AND THE PRAIRIE ECONOMY:
SOME MEASURES OF GROWTH IN ALBERTA, SASKATCHEWAN, MANITOBA AND CANADA,
SELECTED YEARS 1946, 1953 AND 1957

	Alberta			Saskatchewan			Manitoba			Canada ^a		
	1946	1953	1957	1946	1953	1957	1946	1953	1957	1946	1953	1957
Population (Mid-year thousands)	803	1,012	1,160	833	861	879	727	809	860	11,962	14,462	16,163
Industrial Employment (1949=100)	83	129	152	92	116	125	90	107	111	88	113	123
Personal Income (\$ millions)	666	1,278	1,641	602	1,112	1,007	579	920	1,123	9,761	17,880	22,692
Value of Mineral Production (\$ millions) ^b	60	249	410	- 24	48	173	16	25	63	503	1,302	2,108
Value of Crude Petroleum and Natural Gas (\$ millions)	22	200	371	.....	4	80	.....	2	15	27	211	475
Gross Value of Manufacturing Production (\$ millions)	257	556	762	168	267	303	352	585	673	8,036	17,678	21,981

Notes: ^a Statistics on Newfoundland are not available for the year 1946; therefore in order to provide a consistent series this province has not been included in Canada totals.

^b Includes Crude Petroleum and Natural Gas.

Source: Compiled by Commission staff from Dominion Bureau of Statistics data.

Royal Commission on Energy

TABLE L—CRUDE OIL REFINING CAPACITY IN CANADA,
BY PROVINCES, 1940-1958
(in barrels per day)

Year	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Northwest Territories	Total Canada
1940	32,500	250	64,500	57,500	4,150	16,220	16,850	24,500	800	217,270
1945	34,000	250	59,000	75,450	4,500	18,075	18,100	21,000	840	231,215
1950	22,000	300	143,000	75,200	7,800	33,575	46,900	28,850	1,250	358,875
1951	22,000	300	160,000	79,400	20,500	47,500	61,750	28,850	1,250	421,550
1952	22,000	300	164,000	104,500	19,700	50,300	68,000	28,350	1,250	458,400
1953	18,000	300	176,000	135,000	20,000	58,100	69,150	45,850	1,250	523,650
1954	18,000	300	171,500	142,300	20,000	67,300	68,600	55,500	1,250	544,750
1955	18,000	300	210,000	148,800	29,800	66,300	77,500	66,500	1,250	618,450
1956	42,000	300	247,000	159,700	30,800	69,350	79,350	70,250	1,300	700,050
1957	44,000	300	255,800	198,510	33,220	68,975	85,540	74,250	1,300	761,895
1958	49,000	300	264,800	228,822	33,220	67,875	85,290	96,750	1,300	827,407

Source: Mineral Resources Division—Department of Mines and Technical Surveys.

Appendix E

TABLE M—CRUDE OIL RECEIPTS AT CANADIAN REFINERIES, 1940-1958
(in barrels of 35 Imperial gallons)

<i>Year</i>	<i>Canadian Crude</i>	<i>Foreign¹ Crude</i>	<i>Total Crude</i>
1940	8,635,309	41,235,956	49,871,265
1945	7,852,318	58,050,996	65,903,314
1950	26,666,376	82,476,476	109,142,852
1951	47,185,925	83,139,573	130,325,498
1952	58,894,631	82,467,322	141,361,953
1953	69,345,587	81,406,110	150,751,697
1954	92,679,819	76,773,031	169,452,850
1955	105,050,563	86,751,128	191,801,691
1956	125,592,074	106,305,532	231,897,606
1957	126,914,237	111,706,671	238,620,908
1958	134,513,998	107,444,741	241,958,738

¹ Crude oil receipts at refineries do not necessarily correspond exactly with crude oil imports, as reported at customs ports of entry, because of inventories held by pipe line companies and the time lag involved in moving oil from ports of entry to refineries.

Source: Compiled by Commission staff from Dominion Bureau of Statistics data.

OWNERSHIP OF REFINERY CAPACITY IN CANADA, 1958

<i>Company</i>	<i>No. of Refineries</i>	<i>Crude Oil Capacity (bbl./day)</i>	<i>Percentage of Total Canadian Capacity</i>
Imperial Oil Limited	9	318,650	38.5
The British American Oil Company Ltd.	6	146,250	17.7
Texaco Canada Limited	3	91,000	11.0
Shell Oil Company of Canada Ltd.	2	81,500	9.8
Canadian Petrofina Limited	1	29,000	3.5
Canadian Oil Companies Limited	1	27,400	3.3
Cities Service Company Limited	1	20,000	2.4
Standard Oil Company of British Colum- bia, Ltd.	1	18,000	2.2
Royalite Oil Company Limited	4	16,625	2.0
Consumers' Co-operative Refineries Limited	1	16,000	1.9
Sun Oil Company Limited	1	15,000	1.8
North Star Oil Limited	2	15,000	1.8
Canadian Husky Oil Ltd.	3	14,562	1.8
All other companies	7	20,420	2.4
	<hr/> 42	<hr/> 827,407	<hr/> 100.0

Source: Mineral Resources Division, Department of Mines and Technical Surveys.

Royal Commission on Energy

TABLE N — EXPORTS OF CRUDE PETROLEUM AND REFINED PETROLEUM PRODUCTS, 1930-1958

Year	Crude Petroleum		Refined Petroleum Products		Total Crude and Refined Products	
	'000 bbl.	'000 \$	'000 bbl.	'000 \$	'000 bbl.	'000 \$
1930	717	1,281	197	1,250	914	2,531
1935 .....	.....	.....	468	1,008	468	1,008
1940 .....	.....	.....	440	2,000	440	2,000
1945 .....	.....	.....	3,157	14,635	3,157	14,635
1950 .....	.....	.....	399	2,386	399	2,386
1951	342	807	338	3,129	680	3,936
1952	1,425	3,452	1,206	6,870	2,631	10,322
1953	2,507	6,228	348	1,630	2,855	7,858
1954	2,345	6,318	733	3,573	3,078	9,891
1955	14,834	36,254	1,272	5,640	16,106	41,714
1956	42,908	103,923	2,745	12,258	45,653	116,181
1957	55,674	140,975	3,718	16,331	59,392	157,306
1958	31,679	73,044	967	4,927	32,646	77,971

Source: Compiled by Commission staff from Dominion Bureau of Statistics data.

TABLE O — IMPORTS OF CRUDE PETROLEUM AND REFINED PETROLEUM PRODUCTS, 1930-1958

Year	Crude petroleum ¹		Refined petroleum ² products		Total crude and products	
	'000 bbl.	'000 \$	'000 bbl.	'000 \$	'000 bbl.	'000 \$
1930	31,724	48,351	4,074	15,158	35,798	63,509
1935	30,254	31,293	3,632	9,379	33,886	40,672
1940	42,623	48,320	6,217	17,624	48,840	65,944
1945	56,807	72,321	5,657	23,208	62,464	75,529
1950	80,124	203,996	27,140	108,950	107,264	312,946
1951	84,237	233,148	30,373	127,353	114,610	360,501
1952	82,751	210,035	33,796	136,764	116,547	346,799
1953	81,628	213,094	35,303	149,810	116,931	362,904
1954	78,884	212,787	35,321	136,246	114,205	349,033
1955	86,792	229,779	37,694	149,122	124,486	378,901
1956	106,641	271,291	37,534	157,522	144,175	428,813
1957	111,905	305,557	34,734	155,975	146,641	461,532
1958	105,859	278,541	30,445	127,072	136,304	405,613

¹ Crude petroleum includes relatively small quantities of petroleum tops imported for blending purposes.

² Refined petroleum products converted to barrels of 35 Imperial gallons. For the years 1940 and 1945 imports of L.P.G.'s were reported as to value only.

Source: Compiled by Commission staff from Dominion Bureau of Statistics data.

Appendix E

TABLE P — BALANCE OF TRADE — CRUDE PETROLEUM AND REFINED PETROLEUM PRODUCTS, 1930-1958

(thousands of dollars)

Year	<i>Crude Petroleum</i>			<i>Refined Petroleum Products</i>		
	<i>Imports</i>	<i>Exports</i>	<i>Net Imports</i>	<i>Imports</i>	<i>Exports</i>	<i>Net Imports</i>
1930	48,351	1,281	47,070	15,158	1,250	13,908
1935	31,293	.....	31,293	9,379	1,008	8,371
1940	48,320	.....	48,320	17,624	2,000	15,624
1945	72,321	.....	72,321	23,208	14,635	8,573
1950	203,996	.....	203,996	108,950	2,386	106,564
1951	233,148	807	232,341	127,353	3,129	124,224
1952	210,035	3,452	206,583	136,764	6,870	129,894
1953	213,094	6,228	206,866	149,810	1,630	148,180
1954	212,787	6,318	206,469	136,246	3,573	132,673
1955	229,779	36,254	193,525	149,122	5,640	143,482
1956	271,291	103,923	167,368	157,522	12,258	145,264
1957	305,557	140,975	164,582	155,975	16,331	139,644
1958	278,541	73,044	205,497	127,072	4,927	122,145

Source: Compiled by Commission staff from Dominion Bureau of Statistics data.

TABLE Q — SOURCES OF IMPORTS OF CRUDE PETROLEUM¹, 1950-1958

Year	<i>Venezuela</i>		<i>United States</i>		<i>Middle East</i>	
	'000 bbl.	'000 \$	'000 bbl.	'000 \$	'000 bbl.	'000 \$
1950	28,777	80,374	31,267	90,139	17,872	28,113
1951	45,474	125,634	21,724	59,596	13,636	38,795
1952	50,976	126,581	20,337	54,406	8,272	22,711
1953	56,944	144,785	14,575	40,510	7,609	21,763
1954	60,090	158,230	9,168	28,114	6,695	19,593
1955	66,329	172,883	7,166	22,446	9,863	26,608
1956	77,235	196,560	6,161	18,621	19,122	46,496
1957	88,079	241,629	8,076	25,973	14,382	34,464
1958	72,365	199,910	1,398	4,684	30,097	68,902

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TABLE Q—continued

Year	Trinidad		All Other Countries		Total Imports	
	'000 bbl.	'000 \$	'000 bbl.	'000 \$	'000 bbl.	'000 \$
1950	2,208	5,370	.....	.....	80,124	203,996
1951	1,987	4,335	1,416	4,788	84,237	233,148
1952	1,988	4,093	1,178	2,244	82,750	210,035
1953	2,351	5,536	149	500	81,628	213,094
1954	2,931	6,850	.....	.....	78,884	212,787
1955	2,860	6,704	574	1,138	86,792	229,779
1956	3,096	7,387	1,027	2,227	106,641	271,291
1957	1,368	3,491	.....	.....	111,905	305,557
1958	1,999	5,045	.....	.....	105,860	278,541

¹ Includes petroleum tops imported for refining purposes.

Source: Compiled by Commission staff from Dominion Bureau of Statistics data.

TABLE R—SOURCES OF IMPORTS OF REFINED PETROLEUM PRODUCTS,
1950-1958

(in thousands of dollars)

Year	United States	Netherlands Antilles	Venezuela	Trinidad	All other countries	Total
1950	85,340	17,089	5,582	363	576	108,950
1951	106,134	10,655	10,435	86	43	127,353
1952	117,253	11,528	7,895	4	84	136,764
1953	132,680	7,799	7,189	114	2,028	149,810
1954	106,890	20,275	8,544	98	439	136,246
1955	103,944	30,422	13,959	76	721	149,122
1956	107,329	37,947	11,184	3	1,058	157,522
1957	109,945	39,259	5,967	9	795	155,975
1958	78,200	39,450	8,814	217	391	127,072

Source: Compiled by Commission staff from Dominion Bureau of Statistics data.

Appendix E

**TABLE S — CANADIAN SUPPLY AND DEMAND OIL BALANCE,
1956-1958**

(quantities in MB/D)

	1956	1957	1958	% Change 1958 over 1957
Domestic Oil Production	470	498	454	-9
Domestic Natural Gasoline and LPG	8	9	10	+11
Less: Increase in Inventories and Storage;				
Oil	2	-5	5	.....
LPG's	1	.....	.....	.....
<i>Total Domestic Supply</i>	<u>475</u>	<u>512</u>	<u>459</u>	<u>-10</u>
Plus: Imports—Oil	291	306	294	-4
—LPG and Products	103	95	82	-14
—Blends and Other Materials	6	2	2	.....
Less: Exports—Oil	119	152	84	-45
—Products	7	9	4	-56
Less: Pipeline Losses and Unaccounted For Supply	<u>12</u>	<u>1</u>	.....	<u>-100</u>
<i>Total Available Supply</i>	<u>737</u>	<u>753</u>	<u>749</u>	<u>-1</u>
Increase in Product Inventories	<u>19</u>	<u>11</u>	<u>-16</u>	<u>-245¹</u>
<i>Total Consumer Demand for Oil and Products</i>	<u>718</u>	<u>742</u>	<u>765</u>	<u>+3</u>
% Domestic Oil Production of Total Consumer Demand for Oil	74.6	75.9	68.4	
% Domestic Supply of Total Consumer Demand for Oil and Products	66.2	69.0	60.0	
% Effective ² Domestic Supply of Total Consumer Demand for Oil and Products	45.3	47.2	48.5	
% Net Imports of Total Consumer Demand for Oil and Products	38.2	32.6	37.9	
% Net Product Imports of Total Consumer Demand for Oil and Products	14.2	11.9	10.5	

¹ Increase On Opening Inventories.

² Domestic Supplies Used In Supplying Canadian Demand.

Source: Compiled by Oil and Gas Conservation Board of Alberta from Dominion Bureau of Statistics and Provincial Government data.

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TABLE T — SUPPLY AND DEMAND, ALL OILS, 1952-1958

	1952	1953	1954	1955	1956	1957	1958**
SUPPLY							
<i>Production</i>							
Crude oil	61,237,322	80,898,897	96,080,345	129,440,247	171,981,413	181,848,004	165,520,737
Natural gasoline, etc. ¹	579,873	602,368	673,564	868,416	2,595,210	2,980,504	2,809,016
Total Production	61,817,195	81,501,265	96,753,909	130,308,663	174,576,623	184,828,508	168,329,753
Production, bbl/day	168,899	223,291	265,079	357,010	476,985	506,423	461,177
<i>Imports</i>							
Crude oil ²	81,876,206	80,266,682	78,883,670	86,792,460	106,641,358	111,905,473	107,444,741
Products ³	34,218,692	36,015,666	33,501,082	37,657,197	37,456,653	34,644,099	30,435,271
Total Imports	116,094,898	116,282,348	112,384,752	124,449,657	144,098,011	146,549,572	137,880,012
<i>Change in Stocks</i>							
Crude oil .....	.....	.....	+ 104,917	-2,899,590	- 871,857	+ 699,643	- 949,217
Products ⁴ .....	.....	.....	-2,688,573	-1,380,113	-7,549,496	-2,661,024	+5,720,316
Total Change in Stocks	-7,199,565	-9,358,227	-2,583,656	-4,279,703	-8,421,353	-1,961,381	+4,771,299
Total Supply	170,712,528	188,425,386	206,555,005	250,478,617	310,253,281	329,416,699	310,981,064
DEMAND							
<i>Exports</i>							
Crude oil	1,424,456	2,507,314	2,344,948	14,833,971	42,908,086	55,674,228	31,679,429
Products	1,213,344	352,412	484,726	880,932	2,560,313	3,635,832	936,600
Total Exports	2,637,800	2,859,726	2,829,674	15,714,903	45,468,399	59,310,060	32,616,029
<i>Domestic Sales</i>							
Motor gasoline	62,140,038	67,193,393	70,116,107	75,644,262	83,020,237	87,724,628	92,137,073
Middle Distillate ⁵	43,507,842	47,818,022	56,414,725	71,434,493	84,577,275	87,645,800	94,155,317
Heavy fuel oil	34,225,505	36,700,421	39,840,857	43,193,422	50,549,199	48,596,728	43,247,833
All other products ⁶	13,665,838	17,799,653	20,327,445	23,920,554	27,245,311	28,701,008	30,186,830
Total Domestic Sales	153,539,223	169,511,489	186,699,134	214,192,731	245,392,022	252,668,164	259,727,053

Refinery Uses and Losses	11,099,014	14,672,752	12,514,002	14,851,203	16,845,131	17,811,405	18,845,108
Field and Pipe Line Use and Losses	— 234,344	516,544	504,060	2,134,160	551,515	1,409,122	— 11,453
Total Plant Use and Losses	10,864,670	15,189,296	13,018,062	16,985,363	17,396,646	19,220,527	18,833,655
Fuel Oil, Ex-warehoused, Ships Stores	445,679	537,042	235,477	48,788	.....	.....	.....
Total Demand	167,487,372	187,560,511	202,782,347	246,941,785	308,257,067	331,198,751	311,176,737
Oils Not Accounted for	3,225,156	864,875	3,772,658	3,536,832	1,996,214	1,782,052	195,673
Domestic Demand, All Oils Total	164,403,893	184,163,743	199,717,196	231,178,094	262,788,668	271,888,691	278,560,708
Domestic Demand, All Oils bbl/day	449,191	504,558	547,170	633,365	718,002	744,901	763,180

**Preliminary.

¹ Includes L.P.G.

² Includes small quantities of natural gasoline.

³ Includes small quantities of petroleum tops.

⁴ Includes aviation turbo fuel, kerosene, stove oil, tractor fuel, diesel fuel and light fuel oils (Nos. 2 and 3).

⁵ Includes L.P.G. petro-chemical fuel stocks, naphtha specialties, aviation gasoline, asphalt, petroleum coke, lubricating oil and grease, wax, still gas and minor quantities of miscellaneous products.

⁶ Includes L.P.G. in storage in Alberta, 1956-58.

Source: Mineral Resources Division, Department of Mines and Technical Surveys, Ottawa.

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TABLE U—THE RELATIVE IMPORTANCE OF OIL AS A SOURCE OF ENERGY IN CANADA

1945-1958

(expressed in percentages)

Year	Coal	Hydro	Gas	Crude Oil			
				Imported	Canadian	Total	
1945	64.3	8.0	3.4	21.4	2.9	24.3	100.0
1950	53.0	7.8	4.1	27.6	7.5	35.1	100.0
1953	40.4	8.7	5.5	26.6	18.8	45.4	100.0
1955	31.6	9.1	7.3	25.2	26.8	52.0	100.0
1956	29.3	8.3	7.6	24.7	30.1	54.8	100.0
1957	25.4	8.4	9.8	24.9	31.5	56.4	100.0
1958	20.0	9.6	16.1	24.3	30.0	54.3	100.0

Source: "Energy Sources in Canada" annual studies by C. L. O'Brien and A. W. Lovett, Dominion Coal Board.

TABLE V — SOME ALBERTA, UNITED STATES, VENEZUELA AND MIDDLE EAST CRUDE OIL PRICES

1946-1959

(in U.S. dollars per barrel¹ at year-end)

YEAR	CANADA		UNITED STATES				VENEZUELA ²			MIDDLE EAST ²	
	Alberta (Redwater) 35° gravity	Illinois Basin	Oklahoma-Kansas 36°-36.9° gravity	California (Long Beach) 27°-27.9° gravity	East Texas (38°-38.9° gravity)	Texas (30°-30.9° gravity)	Gulf (35°-35.9° gravity)	Officina	Tia Juana	Kuwait	Saudi Arabia
1945	*	1.17	1.15	1.25	1.28	*	*	*	*	*
1946	*	1.37	1.33	1.44	1.47	*	*	*	*	*
1947	*	1.90	1.85	1.98	2.05	*	*	*	*	*
1948	3.20	2.57	2.45	2.65	2.68	*	*	*	*	*
1949	2.88	2.57	2.40	2.65	2.68	*	*	*	*	*
1950	2.73	2.57	2.37	2.65	2.68	*	*	*	*	*
1951	2.44	2.57	2.41	2.65	2.68	2.63	2.63	2.30	1.65	1.71
1952	2.32	2.57	2.41	2.65	2.68	2.63	2.63	2.24	1.65	1.71
1953	2.38-2.64	2.71	2.72	2.79	2.92	2.76	2.76	2.25	1.64	1.81
1954	2.55	2.82	2.76	2.90	3.03	2.88	2.88	2.30	1.72	1.93
1955	2.49	2.82	2.76	2.90	3.03	2.87	2.87	2.30	1.72	1.93
1956	2.49	2.82	2.78	2.90	3.03	2.80	2.80	2.30	1.72	1.93
1957	2.63-2.67	3.07	3.17	3.25	3.48	3.04	3.04	2.54	1.80	2.05
1958	2.56	3.00	3.06	3.25	3.58	3.05	3.05	2.55	1.85	2.08
1959 (March)	2.42	2.97	3.06	3.25	3.58	2.90	2.90	2.40	1.67	1.89

* Prices not available.

¹ This applies to prices of all crudes except Redwater, Alberta, prices which are in Canadian dollars.² F.O.B. shipping port. United States and Canadian prices are field prices.

Source: "Monthly Bulletin of Statistics", April 1959, United Nations, New York; United States Bureau of Mines; Oil and Gas Conservation Board of Alberta.