

To return to oil, I note that reserves of liquid hydrocarbons have increased from about 2.8 billion barrels in 1955 to 5.2 billion barrels at the end of 1962, according to the Canadian Petroleum Association's authoritative Reserves Committee. This reserve level is about 19 times the annual rate of production in 1962, and about 15 times total Canadian demand in 1962. Although the 1963 year-end reserve figures are not yet available, it is my understanding that the ratios to production and demand will remain substantially unchanged.

**SLOW RATE OF DISCOVERY**

While our current productive capacity substantially exceeds current rates of production, the trends in discovery of new reserves since 1960 have been disappointing, particularly since there has been a relatively high rate of exploration.

The corollary of the decrease in finding rate per unit of exploratory effort is an increase in the finding cost per barrel of oil. This raises for the industry the problem of making available the increasing volume of funds necessary to carry on a scale of exploration, development and research adequate to keep our reserves and productive capacity high enough that we can continue to meet all demands for oil and gas....

...I am not going to dwell tonight upon the possibilities of hydrocarbon developments on the northern mainland, on the continental shelf off our shores, or in the Arctic Islands, though I assure you that the Government is keenly interested in the work that has been going on there and which we hope will continue and be successful.

**ALBERTA TAR SANDS**

I do, however, wish to say a word about the oil sands, which now seem to be on the verge of commercial development. The recent comprehensive report of the Oil and Gas Conservation Board of Alberta on the oil sands estimates that the recoverable reserves of raw oil are of the order of 415 billion barrels, of which the recoverable reserves of upgraded synthetic crude oil would be in the order of 300 billion barrels. Three hundred billion barrels happens to be a reputable estimate of the total of proved conventional crude-oil reserves for the world as of the end of 1962. Naturally, the possibilities of development of these sands have aroused intense interest wherever in the world the subject of oil is a matter of concern.

Much has been said and written about how and when the sands should be developed. Following extensive hearings, the Government of Alberta announced a policy on their development, which, as I understand it, is designed to permit oil-sand production to supplement conventional crude production when and as this becomes necessary, having regard to trends in discoveries, the development of present markets for Canadian crude, and the possible development of new markets outside the established marketing pattern....

**OTHER ENERGY SOURCES**

While you are primarily interested in the petroleum industries, and they are my main subject tonight, you and I are well aware that their fate is bound up

with that of the other energy sources, both in the Canadian market and in the export markets, which are vital to these industries.

In the interval between 1955 and 1963, the demand for Canadian electrical energy increased from about 82 billion kilowatt hours to about 123 billion. Of this, not more than about 6 per cent has been exported in any year, less than 4 per cent in the most recent years. The proportion of thermal energy in total net generation increased from less than 7 per cent in 1955 to more than 11 per cent, and can be expected to grow. The proportion of nuclear energy is still almost imperceptible, but it has begun what is almost certain to be, in time, a tremendous growth.

Coal is the only energy source that has lost ground in recent years. Total demand for coal and coke fell from over 36 million tons in 1955 to about 24 million in 1963, production from about 15 million tons to something over 10 million. The competition from oil and gas was of course the main reason.

To complete this review, let me draw to your attention the shift that has occurred in the composition of Canadian energy consumption. In 1955, petroleum supplied 47 per cent of consumption, gas 5 per cent. Coal and coke together supplied 33 per cent, hydro electricity 9 per cent, and fuel wood over 5 per cent. Fuel wood supplied more energy than gas. In 1962, petroleum supplied about 56 per cent, natural gas 15, coal and coke 16, hydro 10, and fuel wood only a bit more than 3 per cent. This, in seven years, is quite a change - and you are the people who cause it all, or at least enough of it all, or at least enough of it to convince me that you have been very, very busy....

**NATIONAL OIL POLICY**

The 1961 statement of the National Oil Policy was fairly specific as to dates and quantities. It proposed that production of crude oil and natural gas liquids be increased from the 1960 level, about 544,000 b/d to 640,000 b/d in 1961 and about 800,000 b/d in 1963. It suggested that this be done by increased use of Canadian oil in domestic markets west of the Ottawa Valley, and by expansion of export sales, largely in existing markets which could be reached through established pipe-line systems. It was emphasized that it was the desire of the Canadian Government to achieve these increases without causing any serious disruption of United States markets, and with full regard to the interests of other countries which traditionally had supplied oil to Canada. The essence of the Policy was that it should be carried out voluntarily, but the Government made plain that it would use its compulsive powers if necessary.

The Policy has worked well, and it has worked well precisely because the industry has co-operated so well. In many cases this co-operation has involved making large investments which would not, in the absence of the National Oil Policy, have been made, or would have been made at another time, or elsewhere. Some existing capacity was made temporarily idle. In some cases increased production has not compensated for income foregone. Pipe-line companies, as well as producers, refiners, importers

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