Trans Mountain Oil Pipe Line Company has 712 miles of right-of-way and 825 miles of main pipeline. The line passes through some of the most rugged and difficult terrain in North America, crossing several mountain ranges between the terminal at Edmonton before reaching sea level at the refineries at Vancouver and Puget Sound. Nine refineries are now connected to Trans Mountain, five in British Columbia and four in the State of Washington.

The Montreal refining centre is served by a pipeline from tidewater at Portland, Maine. This is the nearest port on the Atlantic seaboard from which tanker-borne crude oil from Venezuela, the Middle East and Africa may be trans-shipped by pipeline to Montreal. This joint system of the Montreal Pipe Line Company and its wholly-owned subsidiary in the United States, Portland Pipe Line Corporation, shortens tanker voyages by eliminating the Atlantic Provinces seaboard, Gulf of St. Lawrence, and St. Lawrence River segments. However, there are excellent deepwater port sites in the Atlantic region and on the St. Lawrence which are now being considered for development as tanker terminals to provide pipeline routes within Canadian territory to Montreal. The Portland-Montreal system consists of 236 miles of right-of-way and 708 miles of main pipeline. Throughput in 1972 was 442,458,000 b/d, all of it crude oil.

The major trunk lines linking the western provinces and Ontario are served by an extensive system of secondary trunk lines and field gathering lines with a combined total mileage of 6,849 miles in 1972. Of this total, British Columbia had 359 miles of secondary trunk lines and 153 miles of field gathering lines; Alberta 2,713 and 1,417; Saskatchewan 1,660 and 362; Manitoba 156 and 10; and Ontario 19 miles of field gathering lines only.

13.3.5 Processing

In 1973, Canada had 40 refineries with a total refining capacity of approximately 1.8 million b/d. Refinery runs were about 1.7 million b/d and this production rate was approximately equal to the total consumption of petroleum products in Canada. Production of Canadian refineries is closely in balance with total market demand although there is some interchange of individual products to and from the United States.

In the past, the location and size of Canada's refineries have been mainly determined by the tendency to locate them close to centres of consumption. Thus approximately 55% of the total capacity is located within the populous regions of southern Ontario and Quebec. Ontario has two main refining centres, in Sarnia and south of Toronto; Quebec has the largest refining centre, in Montreal, as well as a refinery in Quebec City. British Columbia has seven refineries most of them located close to Vancouver.

A more recent trend has been the increase in size of individual refineries to effect economies of scale. Although the average size of individual refineries is increasing all over Canada, this is particularly evident in Alberta, Saskatchewan and Manitoba. These provinces were previously served by a multiplicity of small refineries close to individual cities but many are now being phased out and replaced by two large refineries in Edmonton where they will be close to the main sources of crude in Alberta. They will be of optimum size and will confine any environmental problems to one area, thus facilitating pollution control.

A third factor influencing refinery location has been proximity to deepwater ports in cases where crude input is received by tanker. The economies now being obtained with very large tankers have stimulated the construction of large refineries in the Atlantic Provinces, specifically at Saint John, NB; Point Tupper, NS; and Come By Chance, Nfld. These refineries are located in areas of relatively low population density so that a major proportion of their output is either shipped inland or re-exported.

In 1973, Canadian refineries yielded an average 32% of motor gasoline, 34% of middle distillates including light heating oil, diesel oil and jet fuel and about 20% of heavy fuel oil. Other products included liquefied petroleum gas, petrochemical feedstocks, aviation gasoline, asphalt and lubricating oil. To meet the high yields of light products most refineries are equipped with a catalytic cracker and total installed cracking capacity was equivalent in 1973 to about 23% of the crude distillation capacity. Catalytic reforming amounted to about 15% of crude capacity. This process is principally being used to upgrade gasoline quality but also produces aromatic petroleum chemical feedstocks. To meet the need for high quality low sulphur distillates, hydrogen treating plants have been installed totalling 36% of crude feed and it is common practice to hydrogen treat most or all of the gas oil and light distillates. Six hydrocracking units have been installed in Canada capable of treating 5% of crude feed. This new process is of