

#### A.4 Petroleum Project Engineering Consulting Industry

Canada's expertise in energy-related project engineering is among the best in the world, with companies such as Lavalin, Monenco and SNC being most prominent in the downstream aspects of the petroleum industry. The Association of Consulting Engineers of Canada (ACEC) 1984 directory lists 56 companies as having specialized expertise in the oil and gas pipeline industry, 45 in the petroleum production industry, 24 in the refining and processing industry, and a further 20 in the oil shale and tarsand extraction and processing industries. Few petroleum engineering firms are members of ACEC and this is especially true for those firms providing services for the exploration, production, and reservoir engineering aspects. Firms such as Sproule Associates, Teknica, and D&S Petroleum Consultants and Tri-Ocean Engineering are not members although they have strong capabilities and are active internationally. Generally, these companies offer services ranging from economic and financial studies, project-design and procurement, to construction management, quality control, training, and process evaluation. The Canadian firms are especially well known for expertise in the fields of reservoir engineering, petrophysics, facility design and computer software.

Historically, Canadian engineering expertise in the oil and gas processing has been below that which existed in other energy-related areas. Although firms have been designing field processing facilities for many years, prior to 1980, Canadian engineering firms had engineered no refineries. However, in recent years, Canadian engineering expertise in these areas has grown in line with the increased presence of Canadian-controlled companies in the refining, processing, and petrochemical industry.

#### A.5 Petroleum Equipment and Services Industry

##### (i) Equipment

The demand for oilfield equipment is obviously related to activity levels in the petroleum industry. Figures on exploration and production expenditures, rig counts, and metrage drilled, provide a good indication of future activity in the equipment and services industry. Canadian companies which survived the 1982-83 recession in this industry underwent considerable rationalization and are considered to now be in a much more competitive position than prior to the recession. However, despite some recovery during the past year, the equipment industry is still only operating at 50% capacity, with almost half of its present production dedicated to export markets.

The Canadian petroleum equipment industry has progressed from having virtually no manufacturing presence 20 years ago, to presently supplying half of the Canadian market in addition to the exports. This growth to an industry of over 300 companies has been accomplished largely without the benefit of tariffs as over 70% of imports enter Canada duty-free.

The bulk of the industry is located in Alberta. The most recent survey of the Petroleum Services Association of Canada reported excess inventory of 36%, excess manufacturing capacity of 50%, and excess manpower of 15%. Employment per company ranges from 5-200. While the relatively small company-size increases flexibility and assists the industry in adapting to its