

ment of northern pipelines will form an important element in Canadian Government consideration of proposals for such pipelines.

- (6) The National Energy Board will ensure that any applicant for a Certificate of Public Convenience and Necessity must document the research conducted and submit a comprehensive report assessing the expected effects of the project upon the environment. Any certificate issued will be strictly conditioned in respect of preservation of thermal and other erosion, freedom of navigation, and the protection of the rights of northern residents, according to standards issued by the Governor General in Council on the advice of the Department of Indian Affairs and Northern Development.
- (7) Any applicant must undertake to provide specific programs leading to employment of residents of the North, both during the construction phase and for the operation of the pipeline. For this purpose, the pipeline company will provide for the necessary training of local residents in co-ordination with various government programs, including on-the-job training projects. The provision of adequate housing and counselling services will also be a requirement.

The Federal Government will maintain a continuing review of proposals for the construction of northern pipelines and has under way a general review of foreign ownership and control. Further guidelines may be issued as a result of such reviews and would apply to all applications for such pipelines.

BACKGROUND TO GUIDELINES

A second great era of new oil and gas pipeline construction may soon begin in Canada. In the 1950s, transcontinental oil and gas pipeline systems were constructed from Western Canada fields east and west across the country and, since then, these systems have been continually expanded. Plans are now being developed for gas and oil pipelines from the Far North, southwards to Canadian markets and to United States markets. In anticipation of this new wave of pipeline construction activity, the Government of Canada has announced guidelines for companies engaged in planning these new enterprises.

Pipeline construction on the scale envisaged will raise numerous questions such as those relating to investment, ownership and control, jurisdiction, preservation of the delicate northern environment and ecology, thermal erosion, and pollution control in the Arctic. The guidelines published at this time are expressly designed to assist companies in their present early stages of planning, particularly in relation to these policy questions.

Discovery of the huge Prudhoe Bay oil field on the north coast of Alaska, and the subsequent acceleration of exploration throughout the Canadian North, has given much promise of major resource development. The markets will be available for all the

oil and gas that can be produced, provided production and transportation operations meet the economic requirements of competitive marketing. Even though Prudhoe Bay proved oil reserves are very large, they are only equivalent to about two or three years of the rapidly-increasing U.S. requirements as forecast for the year 1980. The growth of U.S. gas markets is even more rapid than the growth in oil markets and the 1970s will see a major deficit in supply unless new reserves can be linked to markets. The incentive for northern oil and gas resource development is, therefore, great, and the benefits that will flow from the opening up of Canada's resources in the Far North will have a multiplying effect throughout the entire economy. The urgency for the proving up of new reserves is seen in the fact that while Canada's oil reserve position is good, in 1969 the United States consumed 32 per cent of the world's oil output yet had only 6.6 per cent of its proved reserves.

IMPORTANCE OF TRANSPORTATION

The key to successful oil and gas development in the North is efficient transportation. Already several pipeline and financial groups have come forward with proposals to build gas pipelines from Prudhoe Bay and the Canadian North to Canadian and U.S. markets. A gas pipeline from the Arctic directed to mid-continent markets would cover a route of some 2,600 miles; one to Pacific coast markets, in excess of 2,100 miles. Other possible routes would also involve great distances. Only one gas pipeline system from the North is likely for the decade of the 1970s as it would require an investment of from \$2 to \$3 billion, depending on its route and the size of the markets to be served.

An oil pipeline from Prudhoe Bay to the Chicago area along a Mackenzie River route in the Northwest Territories would cover some 3,200 miles and cost well over \$2 billion. While the Trans Alaskan Pipe Line is the only oil line that has to date received the approved commitment of its sponsors, a considerable amount of research work and feasibility study has been undertaken by industry in Canada towards the day when an oil pipeline will be built from the North over Canadian territory.

The guidelines established by the Government of Canada at this time emphasize the care that must be taken in any pipeline project to protect the Arctic environment, particularly in permafrost and muskeg areas, where special methods of construction and operation must be adopted to preserve the delicate temperature balance and in all ways protect the natural environment. Permits for construction will not be given without appropriate guarantees in this respect.

BENEFITS FOR NATIVE NORTHERNERS

Within the North itself, pipeline construction and operation will bring great benefits in the form of employment and increased revenues for residents of the North. Furthermore, the existence of such a trans-