Offshore well-drilling in the Arctic - A platform of ice

In cooperation with NRC's Division of Building Research, Panarctic Oils Limited and Foundation of Canada Engineering Corporation, both of Calgary, Alberta, have pioneered a remarkable new technique for offshore well-drilling in the high Arctic. This involves building floating ice platforms for supporting the drilling equipment.



Areas of the high Arctic with good potential for off-shore drilling using the ice platform technique are shown in blue: this color outlines sea areas with continuous ice cover and no ice movement in the winter. In the past few years, several artificial ice platforms have been built off Melville Island, which is due north of Victoria Island, on the 110th meridian of longitude, and off Ellef Ringnes Island, the dagger-shaped island northeast of Melville Island. Energy, Mines & Resources/Énergie, mines et ressources

With the progressive depletion of conventional oil and gas reserves in Southern Canada and the recent drastic increases in the international price of petroleum products, petroleum exploration in frontier areas of Canada is currently generating considerable interest. A major gas exploration program is now centered in the Canadian high Arctic, specifically in the Mackenzie River delta region of the Beaufort Sea and in the Arctic islands, such as Melville and Ellef Ringnes Islands.

A number of sites with good gas potential have been identified on the mainland of these islands. Since the gasbearing formations are thought to extend offshore, a program of offshore drilling is called for to map and measure the size of exploitable reserves. Very large reserves are required to make exploitation of an Arctic gas field economically feasible.

Because of the harshness of the Arctic environment, conventional offshore drilling techniques and equipment are unsuitable. South of the permanent pack ice (map), sea ice is typically six to eight feet (1.8 to 2.4 m) thick, with little or no open water in summer. There is complete dark-