

mates that demand will reach 24.5 trillion cubic feet . . . and 33 trillion cubic feet by 2000. American consumers . . . are estimated to require about 700 trillion cubic feet during the remainder of this century. At the end of 1972, proved reserves . . . in the U.S. totalled about 271.4 trillion cubic feet.

"The Oil Sands of Northern Alberta. . . Three activities in oil and gas development in Canada . . . can change the rules of the game . . . they are the oil sands of northern Alberta, the gas and oil discoveries on the Mackenzie Delta, and, the gas and oil discoveries in the Arctic Islands. . . .

"Canadian deposits of oil sands appear to be concentrated in three formations in northern Alberta. The largest . . . is the 'Athabasca Tar Sands' . . . which contains about 88 per cent of total reserves. This deposit is about 160 miles long, with a maximum width of about 80 miles . . . it appears to be the only oil sands deposit in which open pit . . . recovery processes can be used. The other major deposits of oil sands are also in northern Alberta . . . the Grand Rapids Deposits and the Bluesky-Gething Deposits. The three . . . occupy a land area of about 12,000 square miles or about 5 per cent of the land area of the Province of Alberta. Within these 12,000 square miles, the ERCBA estimates . . . reserves of more than 600 billion barrels of which about 300 billion are recoverable by the existing technology. . . . If synthetic crude were produced at the rate of 2 million barrels per day—the likely rate of total crude oil production during 1973 in Canada—the 300 billion barrel deposits now technologically available would last for nearly 430 years . . . (however) access to the entire 300 billion barrels of oil requires a sophisticated 'in situ' recovery process . . .

"Current Developments in Oil Sands. The Geological Survey of Canada made the first geologic reconnaissance survey of the oil sands region in 1875 and drilled the first hole in the oil sands about the turn of the century. . . .

"By 1960 research was well enough advanced for several companies to apply to the Alberta Government for permission to construct and operate commercial plants to produce synthetic crude from the Athabasca Tar Sands Deposit. In 1964 the go-ahead signal was given Great Canadian Oil Sands to build a plant capable of producing 16,425,000 barrels of synthetic crude annually. . . . The other major oil company involved in (current) oil sands activity . . . is the Syncrude group . . . comprised of four major oil companies: Atlantic Richfield Canada, 30 per cent ownership; Cities Services Canada, 30 per cent ownership; Imperial Oil, 30 per cent ownership; and Gulf Oil Canada, 10 per cent ownership.

"Mackenzie Valley Pipelines. . . . Energy supply developments have occurred within the last few months and years on the Mackenzie Delta in the Northwest Territories of Canada. . . .

"Energy exploration in the Mackenzie Delta followed the Alberta discoveries. . . . Interest lagged . . . until about 1966 when . . . Imperial Oil set off the massive explorations. . . . Drilling activity . . . currently places greatest emphasis on discovery of natural gas, although major finds of crude oil have already been made. . . . Part of the current interest . . . is accounted for by the fact that industry executives feel the threshold requirements to justify a natural gas pipeline . . . is in the vicinity of 15 trillion cubic feet . . . on the basis of emerging contracts and recent discoveries . . . it is widely assumed . . . that the 15 trillion cubic feet threshold has probably already been met.

"I can only call your hurried attention . . . to the potential of the Arctic Islands . . . which will probably turn out to be an even larger source of energy supply . . . than the Mackenzie Delta or east coast offshore resources . . . Pan-Arctic has already found four major gas structures. . . .

"The Vital Policy Issues. What kinds of trade-offs will be required for the United States to gain significant access to Canada's energy fuels? The answer will be conditioned at least partially by the emerging Canadian concern that its energy resources have been exported according to terms . . . that do not reflect the real present value of those resources. . . . However, Canadians would undoubtedly object if (future) price change in energy resources were to be offset by import surcharges. . . . That is, if balance of payments problems force the United States to resort to increased import surcharges . . . Americans must think long and hard about the desirability of specifically exempting Canada from these protective devices. . . . Some favored-nation treatment of Canada may well be a second condition of increased American access to Canadian energy resources. . . . (and) If the United States is serious about (maintaining) a stable source of energy supply in North America, will it be willing to contribute . . . to the development of a fund for environmental service charges . . . (and) . . . to a transportation and transmission fund which allows increased Canadian ownership of production, exploration and transmission facilities?

"Finally . . . are Americans and American firms willing to allow greater Canadian participation in the ownership and control of Canadian subsidiaries of American enterprises? Will American debt capital be allowed to replace American equity capital in a significant area of investment activity? Will management decisions be made more often by Canadians in a context of Canadian concern?"