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How Much More Oil?

One of the major battles fought on Capitol Hill this year has been over pricing and taxing of crude oil. Part of the petroleum industry has taken the position that given sufficient incentives, they could find and produce much more oil. Conversations with veteran oil geologists and exploration managers reveal a sharp division of opinion. Some are sincerely and deeply optimistic about finding much more oil, but another group with equal conviction holds the opposite view. The optimists cite the fact that most of the area of the continental shelves and part of Alaska remain undrilled. They also believe that they will find much more oil within the contiguous 48 states. They assert that improved methods of recovery will bring out more oil from formations where it is currently unproducible.

The pessimists point to the poor results obtained during the past 5 years in drilling in the contiguous 48 states. They concede that more oil will probably be found in the frontier areas, but they point to disappointments in drilling on the continental shelves. Major oil companies spent nearly \$1 billion to obtain the right to drill dry holes in the Destin Anticline located in the Gulf of Mexico west of Florida. Results of drilling the first hole off the mid-Atlantic Coast were also not encouraging.

The National Energy Plan projected that domestic petroleum production (including condensate) will total about 11 million barrels per day in 1985, or about 1 million more than current levels of production. This estimate is optimistic. Under present leasing policies and federal regulations, there is no possibility of substantial additional oil from the outer continental shelves by 1985. A useful contribution will come from Alaska, but if the Plan's target is to be met, most of the production must come from the contiguous 48 states. Moreover, to sustain the production rate, a large amount of oil must be discovered—about 3 billion barrels per year. During the past 4 years, discoveries averaged only 1.2 billion barrels and little of that was in new fields.

A recent release by the Federal Energy Administration, now part of the Federal Energy Organization, provides a historical perspective. In 1976 there were 30,000 oil fields, but half of the total production came from only 100 fields. Among these large fields, 76 were found before 1955. Only eight large fields came into production in the period 1966 to 1975 and they yielded only 3.9 percent of the total oil. Thus domestic production in 1976 was largely obtained from discoveries made decades ago. An example is the great East Texas field discovered in 1930. It still ranks high with respect to both reserves and production, but only 20 percent of its original reserves remain.

There is another reason for the view that large new reserves will not be found in the contiguous 48 states. Nearly 2.5 million holes have already been drilled, many of them spotted by a combination of expert judgment, experience, and geological, geophysical, and geochemical information.

By far the best prospects for major discoveries are in the frontier regions. In one frontier field alone at Prudhoe Bay, Alaska, reserves match the total found in 29,900 fields in the contiguous 48 states. But some 40,000 additional holes a year are being drilled in the unpromising territory. At the same time, vast areas of the outer continental shelves go untouched. The total area that has not been drilled is about equal to that of the well-explored sedimentary basins on shore. As Hollis Hedberg and others have pointed out, we will have no basis for an estimate of oil potential until we have drilled. With luck, an amount equal to five times our present reserves might be found. However, on a bitterly cold day in winter, one cannot heat a house by burning hopes. Prudence dictates that this country should have a better basis for estimating how much more U.S. oil.—PHILIP H. ABELSON