

GEOPOLITICAL ASPECTS OF NEW OIL:  
THE SEARCH FOR ADEQUATE AND CONTINUOUS SUPPLY

Melvin A. Conant

CONANT AND ASSOCIATES, INC.  
9901 Phoenix Lane  
Great Falls, Virginia 22066

However much energy forecasts vary, depending upon a large number of economical, geological, technical, and political assumptions, there is widespread agreement on certain trends. These are 1) if the industrial world experiences, over the next decade, a better-than-recent average economic growth rate of 4-4.5% and 2) if the energy consumption growth rate is nearly comparable, then the world community of nations will almost assuredly be competing intensely for oil in world trade. And if, as we have been warned will occur, the U.S.S.R. is included among these nations, there will then be an even greater increase in oil prices as a result of a chronic shortage of oil. For many importing states, the general condition will be one of an inability to compete with a few large energy consumers while coping with major social, economical, and political issues, and a lack of available alternative energy sources. Finally, underlying all these concerns will be the importance of Middle East supply as the major source of oil in world trade.

Dependence upon Middle East sources for a very high proportion of oil in world trade appears to be one of the "constants" in energy equations. Possessing today some 60% of proven and probable reserves, the Middle East may well remain the most prolific source of international oil through our lifetime. The Middle East today supplies the U.S. with nearly 50% of its oil imports (crude and products), approximately 80% of West Europe's import requirements, and 77% of Japan's. From nowhere else comes such a profusion of oil; there are no other truly giant conventional petroleum deposits (it is possible that Mexico's deposits could rival those of the Mid-East but the information is presently too incomplete).

Obviously, Middle East supply brings with it serious and mounting concerns. As long as it remains such an important source of world oil, we will have to accept that it is a commodity which is plagued by risks of continuing political instability whose origins are very deep in history; it is by no means summed up only in the Arab-Israeli dispute. We must understand that we are dealing with ancient rivalries derived from cultural, religious, and economic differences between the peoples of the Nile and the Fertile Crescent of the Tigris and Euphrates and between the Muslim peoples of the Arab world and those of Persia.

The contemporary usage of "Lebanon," "Syria," "Iraq," "Jordan," the "United Arab Republic" (Egypt), "Iran" (Persia), "Saudi Arabia," and "Israel," which implies nation-states of a form familiar to the Western world, misleads us again and again. Regardless of the modern names, we are still witnessing the break-up of one of the great imperial systems -- the Ottoman Empire. This fragmenting process is made infinitely more complex by the strategic importance of oil to the industrial world, and by the intervention of western powers into the affairs of the region.

The point should be clear that access to Middle East oil will always be inextricably bound to the prevailing political trends; it will not be expressed in relatively simple, commercial terms. The combination of these factors lends great urgency to the task of reducing dependence upon the region, by diversifying our sources of oil and encouraging the rapid development of non-conventional petroleum deposits (shale, tar sands, and the so-called "heavy" oils) and of alternatives to oil itself. Of all these courses of action, the search and exploitation of new deposits of crude are tasks which can be undertaken with minimum delay as the technology of exploration exists: we can lay the pipe, we have the tankers and the refineries already.

In order to minimize the "geopolitics" of oil, by decreasing one's dependence upon a single, politically sensitive area, one must take into consideration the number of factors which would contribute to easy access to oil. These would be seeking out regions for exploration which are 1) controlled by non-Communist countries; 2) distant from the Middle East; 3) dependent upon earnings from oil; 4) within a comparatively short distance from the commercial markets; 5) areas whose political objectives are such as to find them not part of any cohesive bloc; and finally, 6) regions whose reserves are of such magnitude that they would be useful alternatives to a reasonable proportion of Middle East supply.

In the case of Japan, for example, the most obvious "zones" of interest would center upon the prospective regions of offshore South East Asia, Indonesia, and the South China Sea. Others would be China (a future possibility), the Soviet East Siberian and Sakhalin fields (also a future possibility), Alaska, the Canadian Arctic, and Alberta (the last named Canadian sources being of considerable interest at the present time). Another Japanese security zone for alternatives to Middle East oil would also, surely, include some exports from Mexico and, eventually, from the Venezuelan Orinoco region.

By how much would Japan have to reduce its Middle East dependence to gain added security? Today, Japan imports a total of about 5 MMB/D; of that, 3.5 MMB/D come from the Gulf proper. The volumetric flow will increase, assuredly, with time. But if Japan had in existence a substantial strategic petroleum reserve (perhaps in the order of four months total imports, or 600 MM barrels) over and above an increased commercial inventory and were also fortunate enough to obtain perhaps 1.5-2 MMB/D from other zones, the problem of oil supply security for Japan might be manageable.

The United States is in a different situation. Faced with the prospect of declining onshore reserves and an uncertain amount of additional offshore oil, its present 50% dependence upon oil imports -- approximately 8 MMB/D (3 MMB/D than Japan's total imports) -- compels it to examine oil supply zones less vulnerable to disruption than the Middle East. An inner and primary zone would include Venezuela, Mexico, and Canada. Others, more greatly dispersed, would be Nigeria, the polar latitudes, and the Falkland-Argentine shelf.

The Orinoco Valley belt in Venezuela is still thought to contain one of the most extensive sources of oil with some 700 billion barrels of oil (perhaps 70 billion barrels recoverable by the application of known techniques). A conservative billion barrel estimate of Mexico's oil is 12 billion barrels "proven," 30 billion barrels "proven and probable," and 60 billion barrels "in place." The Canadian "heavy" oil and tar sands are, potentially, of comparable significance: possibly 954 billion barrels of oil, from which some 27 billion barrels could be put in the market using present day techniques.

The overlap of Japanese and U.S. oil security zones need be of no concern; the successful development of the great unexploited regions of Alberta, the Canadian Arctic, Mexico, and Venezuela would make available to the industrial world an additional volume of substantial size which would, in time, diminish the strategic significance of Middle East Oil.

These reserves are known to exist. We may not, at present, be fully cognizant of the necessary technology to exploit these diverse reserves, nor have the required funds, nor be sure of whether the various interested governments will use every incentive to encourage their exploitation. But the oil is there -- it does not have to be discovered.

Perhaps the greatest unknown is the political aspect, the extent to which government policy may encourage or inhibit exploitation. For example, current Canadian estimates warn, despite the enormous amounts of oil in the tar sands, and the existing heavy oil, that Canadian production is to decline (1978: 565 MMB/D; 1985: 282 MMB/D; and 1990: 221 MMB/D) while demand increases (1978: 687 MMB/D to 1990: 836 MMB/D). Is this to be the case?

Although none of these zones, from the Japanese, U.S., or the rest of the industrial world's perspective, is going to be developed soon, the launching of a major effort to exploit these resources would be an important signal to OPEC generally -- and to OAPEC in particular.

Thinking in these terms, one is reminded that the U.S. possesses a truly extraordinary oil resource whose extraction may prove to be not much more difficult than that of the deposits of Venezuela's Orinoco. The total oil in place in the U.S. oil shale deposits is

estimated at 2 trillion barrels, of which 80 billion may be recoverable with current techniques. (Estimated production for 1980: 100 MB/D; for 1985: 400 MB/D, all based on present levels of commitment.) Apart from capital and technical problems, however, the successful exploitation of these shale deposits is made more difficult through other conflicting interests, such as environmental impacts on the surrounding regions, the diversion of scarce water supply, conflicts of jurisdiction and purpose between the Federal government and state governments and also between various agencies within the Federal government itself.

With all these complications, the present judgment is that, as vast as the shale deposits are, we are less likely to develop them as assiduously as we would the resources of other countries -- barring a shock similar to the 1973-74 Arab embargo. Yet it is this vast domestic resource (plus, of course enormous coal deposits) which makes the crucial difference between the U.S. and Japan.

Another factor which one must take into account in attempting to reduce dependence upon Middle East oil is the still largely unknown effects of enhanced recovery techniques -- prolonging the life of oil fields, thus permitting a greater volume of oil to be produced. It is the unique contribution of chemists, chemical and petroleum engineers, and geologists which has accomplished some of the task. There is hope that they may be able to make even greater strides in the area of enhanced recovery techniques. For example, the usual estimate for the extraction of oil without the employment of such recovery techniques is about 25%. As a general rule, the employment of secondary techniques (injection of water, gas) and the wider use of tertiary techniques (injection of heat and/or chemicals) may increase the amount of recoverable to 32%. It is possible that these techniques could increase the volume of oil from known reserves world-wide by as much as 250,000 MMB, thereby significantly prolonging their useful life.<sup>1</sup> There is every reason to believe that such techniques, applied under similar conditions, would also increase the overall yield of new oil reserves.

Confounding many of our hopes for limiting reliance upon the Middle East and increasing oil in world trade from other sources is the too-infrequently discussed subject of the "finding rate" for new oil. The brutal fact is that for the last thirty years -- outside the Middle East and the Soviet Union -- we do not believe there has been discovered a single proven or probable reserve of more than 25 billion barrels. Neither Libya, Nigeria, Alaska, the North Sea, nor Mexico qualify as exceeding that level. Yet, if we are to preserve a reserve-production ratio of 10:1 (and some now advocate a more conservative ratio of 15:1) a discovery of such magnitude will be required annually -- the discovery of two North Slopes, if you prefer.

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<sup>1</sup>See Andrew R. Flower, "World Oil Production, Scientific American, March 1978, pp. 42 and 44.

Other views which divert us from a prudent thinking-through of oil supply problems are the classical economists' theory of supply always meeting demand, or that OPEC states will always be willing to produce enough oil for their "customers," or simply that oil has always been found when needed and will still continue to do so. The naivete of these views has yet to be appreciated.

The assumption that supply will meet demand for economic reasons ignores some of the realities of our crucial dependence on oil. It does not consider that in time of chronic shortage, a number of nations may both be unable to pay escalating costs for oil and, for reasons of their oil-dependent economies, be unable to go below a certain level of supply without risking an economic disaster, with severest social and political consequences. Wars have been fought over scarce resources. The "law" of the market place is not always one, when applied, that is accepted peacefully by all involved.

The argument found in so many forecasts of "OPEC Supply Required to Balance" should be banished from our midst unless qualified by the word "desired" for "required." We believe we have in Saudi Arabia an interesting and instructive example of why an oil exporter may find it to be in its own long term interest not to produce at levels desired or even required by oil consumers: it is wasting an irreplaceable asset; oil left in the ground is virtually certain to increase in value over time. If exported, the revenues from today's sales cannot be fully employed, so the surplus is invested in overseas markets whose ups and downs, combined with the erosion worked by inflation, warn of further losses.

There is a pernicious belief that the producing states are economic animals certain to pursue rational, economic goals (as defined by western, industrial states). Hence security and maximum supply can be taken for granted; if, in the passion of a moment, states should act irrationally, they soon come to their senses. It is a line of reasoning which should be re-examined.

Most curious of all is the near-religious conviction that undiscovered reserves of oil are vast and will be discovered in time to ease any future energy crunch. What is an "undiscovered" reserve? It is merely speculation based upon a mix of some geological evidence and surmise, for the most part, which may "prove" to be accurate. However, there is little scientific evidence to support these speculations and scarcely more practical application of drilling to further investigate such predictions.

The prudent man must inquire more into the likelihood that enough oil will be found to give us more time to accomplish a safe passage through what may someday be described as transition from our present dependence upon oil to the use of alternative energy sources.

The search for more adequate and continuous supply may well be unsuccessful; geology, economics, and politics may be against us. Time is not necessarily on our side and we cannot assume ultimate victory in terms of oil. Nor, however, can we just accept this pessimistic scenario; comprehending the scope of our problems may lead to a clearer concept of our opportunities. This is a point which does not appear to have been fully realized in the capital of the world's energy colossus -- the United States whose domestic energy options are so varied as to set it apart from most other industrial nations for whom foreign exploration may be the only alternative to continuing, large dependence upon imported oil.