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FROM THE COMPTROLLER GENERAL

Today, oil supplies may be plentiful and prices within reason, but memories of the shortages and price explosions of the 1970s lead all Americans occasionally to wonder if such events may recur. GAO's new report, *Energy Security: An Overview of Changes in the World Oil Market*, examines the present state of America's energy security. The *Journal* offers three perspectives, one a personal view from Donald Z.

Forcier and Daniel M. Haas, two of the people most involved in producing the GAO report. The other two pieces — one by John H. Lichtblau of the Petroleum Industry Research Foundation, the other by Amory B. Lovins and L. Hunter Lovins of the Rocky Mountain Institute — come at the energy-security issue from two differing angles, each of which should make for provocative reading.

John H. Lichtblau

AN EMPTY PUMP DOWN THE ROAD?

With oil imports on the rise, some proposals
for slowing the decline in domestic production.

AS EVERYONE KNOWS, the world is awash in oil. The Organization of Petroleum Exporting Countries (OPEC), the once dreaded producers' cartel, is struggling desperately to keep its members' production down to a level that will support a price that, in nominal dollars, is half of what it was in the peak year of 1981. The 7½-year war between Iran and Iraq, two major Persian Gulf members of the cartel, has had no impact on total oil exports from the region. Meanwhile, even at the very low prices of the past 2 years, non-OPEC production keeps rising. This year, it is likely to be 600 to 800 barrels per day above the 1986 level. Clearly, the best one-word description of the world oil market now and for the past 7 years is "surplus." Nor are there any signs that the surplus is about to end.

Nevertheless, we increasingly hear public and private voices predicting a full turnaround within 5 to 7 years, with OPEC once again controlling the market and raising prices at will. Newspaper editorials, not in the Southwest but in the Northeast, where the oil industry has no political constituency, have recently predicted that there is "not a question whether there will be another energy crisis, but only when" and have glumly talked about "the empty pump down the road."

The rising chorus expressing fear that the oil market of the 1990s will be a repeat of the painful 1970s does not ignore or deny the existing surplus. Rather, it is based on a different set of facts. For one thing, world oil demand, which fell during the first half of the 1980s, has risen over the past 2 years and probably will again in 1988. For another, during the same period there has been a marked slowdown in the growth of non-OPEC production. And perhaps most important, U.S. oil imports rose in 1986 as much as they had fallen in the previous 4 years (1 million barrels per day (MMBD)), rose further in 1987, and will do so again this year, raising the nation's net import dependency from 27 percent in 1985 to an estimated 37 percent in 1988. Thus, the question for all planners, public or private, is this: Will the oil market of the 1990s signal a return to the 1970s, a continuation of the 1980s, a hybrid of the two, or something altogether different?

GAO's new report¹ on the world oil market comes up with some interesting answers. These may not please everyone, but they are worth listening to, as are those contained in other in-depth studies, such as the

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Department of Energy's (DOE) March 1987 report, *Energy Security*, and the National Petroleum Council's *Factors Affecting U.S. Oil and Gas Outlook*, published in February 1987.

In brief, GAO finds that "a deliberate oil disruption is less likely today than in the 1970's"; that "if a disruption does occur, the United States and other industrial countries are better equipped to deal with such crises than in the 1970's"; but that "within the next ten years world oil production could become more heavily concentrated in the volatile Middle East than ever before." According to the report, it is not certain to what extent this latter trend will really increase the non-Communist world's oil-supply vulnerability nor that it will actually occur to the extent currently envisioned,

U.S. OIL DEPENDENCY WILL RISE STEADILY FROM NOW ON, PROBABLY REACHING 50 PERCENT OF TOTAL OIL REQUIREMENTS BY THE MID-1990s.

given the many economic, technical, geological, and other unpredictable developments that could take place over a 10-year period. Hence, while the GAO report raises and discusses these issues, and especially the question of what kind of "energy security insurance" this nation should have, it does not try to address them with specific recommendations.

A good start in trying to deal with these issues might be a brief look back to see what actually happened in the 1970s to make that decade the nightmare of the world oil market.

First of all, there never was an OPEC policy decision to deny oil to any country. The Arab oil-producing countries, most of which happen to be members of OPEC, imposed such an embargo on the United States (and also on the Netherlands) in October 1973 and enforced it through a progressive reduction of their total oil exports. The goal of the embargo was to

coerce the United States into changing its position in the Arab-Israeli war; in fact, no non-Arab OPEC member supported the embargo directly or indirectly. The embargo did, of course, cause the first great oil price explosion and also demonstrated the importance of Arab oil to the industrial countries of the West. As a means of political coercion, however, it proved a failure, for it did not bring a change in American policy. Eventually this was acknowledged by several senior Arab oil officials, who counseled publicly against threatening again to use oil as a political weapon.

The second oil price explosion was an unintended byproduct of the Iranian revolution of 1979, which cut off most Iranian oil exports for about 3 months. Ironically, the real oil crisis started after Iranian production had been resumed, and was due entirely to a classic hoarding phenomenon under which the widespread fear of an extended or a recurrent Iranian oil disruption caused global inventory accumulation at all levels of distribution. The accumulation pushed prices up, creating inventory profits, thereby encouraging further accumulation. The whole process was supported by the mythical assumption that under OPEC, oil prices could go only one way — up.

The price explosions of 1973 and 1979 were both made possible, or at least exacerbated, by two factors: an absence of excess producing capacity and a dearth of noncommercial stocks upon which the industry could draw to offset the shortage. Today, excess producing capacity around the world is vast — so vast that it threatens OPEC's survival. In the mid-1990s, it will still be quite substantial, although less than now. Under currently projected trends, nearly all the excess producing capacity will be located in the Middle East, making it strategically less secure than if it were more evenly distributed throughout the world. Yet it is difficult to come up with a realistic scenario in which all or most of the Middle East's flowing production and excess producing capacity would become unavailable for an extended period.

The second main cause for the two price explosions of the 1970s, absence of an inventory cushion, is not likely to recur during the next decade. The U.S.

Strategic Petroleum Reserve (SPR) is now approaching 550 million barrels and will continue to grow under existing government policy. Approximately the same volume of noncommercial strategic stocks is available in other industrial countries. In an emergency, reserves could be drawn down at a rate of between 4.5 and 5 MMBD (of which more than 3 MMBD could come from the U.S. reserve) for several months, enough to cope with any likely shortage. This does not mean that psychological and speculative factors wouldn't push prices up significantly at the start of a disruption. But both the magnitude and the duration of the price increase would be substantially curbed by the international availability of supplies from this source, or even by the mere knowledge of its availability. Furthermore, the popular belief of the 1970s that all price increases are irreversible has been shattered by the price drop of 1986-87.

Of course, one can construct a hypothetical Middle East oil-disruption scenario of such proportions and duration that the world's combined strategic reserve stocks would not suffice over time. However, this scenario would have to be based on the occurrence of a major war or a similar military or political disaster. In such a case, the oil shortage would be a by-product of the larger event, and its correction would have to be sought outside the energy sector.

CAN WE TOLERATE A HIGH LEVEL OF FOREIGN OIL DEPENDENCY, EVEN IF NO FUTURE DISRUPTION TAKES PLACE, AND EVEN IF WE ARE ADEQUATELY PROTECTED AGAINST ONE? IT DEPENDS ON WHAT ALTERNATIVES WE HAVE AND AT WHAT COST.

In 1973 and 1979, an SPR of current proportions would certainly have greatly curbed the price increases; prevented any real shortage; and, in 1973, quite possibly dissuaded the Arab oil producers from instituting the

U.S. embargo. Therefore, in protecting ourselves against the hazards of another Middle East oil disruption in the 1990s, there is no more cost-effective means than to keep filling our SPR, at least until it attains the congressionally mandated level of 750 million barrels. The question is not whether we should fill the SPR to this level, but how fast we can do it, particularly as today's low prices are unlikely to last. We also must urge, within the International Energy Agency and through other diplomatic channels, that other industrial countries do not fail in their obligation to maintain adequate strategic reserves. But since our imports are likely to rise much faster than those of Japan and Western Europe, we should be prepared to fill at a higher rate.

Recently the government took another step to ensure the availability of adequate supplies during a foreign oil disruption. It concluded a trade agreement with Canada that assures us of continued supplies during an emergency, at prices no higher than Canada's domestic prices. The agreement is especially significant in that Canada is one of our largest foreign oil suppliers. In 1987, Canada supplied 837,000 barrels per day of crude oil and refined products to the United States, equal to 13 percent of total U.S. imports.

The GAO report deals primarily with the risks of, and remedies for, future oil supply *disruptions*. These may, of course, occur any day, or never. But there is another aspect of our oil import problem, namely our long-term *dependency* on foreign oil. Virtually all forecasts agree that under existing, or even moderately higher, prices, our oil import dependency will rise steadily from now on, probably reaching 50 percent of total oil requirements by the mid-1990s. Even under the very optimistic assumption that successful conservation and substitution measures could keep demand flat by maintaining our trend of declining oil consumption per capita and per unit of Gross National Product, the oil-import dependency ratio would still rise substantially during this period. The reason is the decline in domestic production, which fell by more than 400,000 barrels per day in 1987 and is expected to fall by 150,000 to 200,000 barrels per day this year. At present, rising

production from the Alaskan North Slope has partially offset the decline in the lower 48 states. After 1990, however, Alaskan production will also begin to fall. From then on, the decline in total U.S. production will accelerate.

Can we tolerate so high a level of foreign oil dependency, even if no future disruption takes place, and even if we are adequately protected against one? It depends on what alternatives we have and at what cost. Under equal prices, a lower level of imports and a higher level of domestic production are intuitively, and correctly, viewed as preferable to the reverse, from a foreign policy and a domestic economic point of view. On the other hand, Japan and most Western European countries have long had oil-import dependency ratios of 90 percent or more. Their economies have not suffered as a result. Their crude oil costs have been the same as ours, and they have experienced shortages only on the same two occasions when we did.

Japan and Western Europe, however, have no choice but to import all or most of their oil, as they have little or no indigenous production. By contrast, the United States is still the world's second largest oil producer and has a very substantial undiscovered oil

obsolete by-product of the second price explosion. This tax has not yielded any revenue in the past 2 years, nor will it this year. To abolish it, then, would cost the Treasury nothing. To retain it may cost the nation, in that even a moderate price increase this year or next, which is badly needed by domestic producers, would trigger the WPT for oil from development wells. The consequence would be fewer development wells than would otherwise be drilled and fewer additions to existing proved reserves, since the bulk of these additions consist of upward revisions of existing reserves as a result of new information obtained from the drilling of development wells.

Another negative public policy is the long-standing prohibition against drilling in the Arctic National Wildlife Refuge (ANWR). The U.S. Geological Survey, as well as many industry geologists, considers this the most promising unexplored area in the United States. Should exploratory drilling locate large commercial reserves, the cost of protecting the environment could be borne out of the earnings from the ensuing production. If there are no commercial finds, there will be no need for such large-scale protective measures. The arguments against ANWR exploration and production are similar to those made 13 years ago in the case of Prudhoe Bay. Had these arguments prevailed then, the largest oil reservoir ever discovered in North America would have remained undeveloped. Its impact on reducing U.S. oil imports — and by extension, the demand for and the price of OPEC oil — would have been lost. Meanwhile, the 20 years of oil operations on the Alaskan North Slope, provide an impressive demonstration that large-scale oil operations and maintenance of the environmental balance are not mutually exclusive.

Regarding new governmental action, a tax incentive to stimulate the drilling of new wells would undoubtedly increase the level of U.S. production from what it would otherwise be. Given the virtually certain

WHILE WE CANNOT ARREST THE DECLINE IN DOMESTIC PRODUCTION, WE CAN ADOPT POLICIES THAT SLOW IT DOWN AND DISCARD POLICIES THAT SPEED IT UP.

potential. So while we cannot arrest the decline in domestic production, we can adopt policies that slow it down and discard policies that speed it up. Foremost among the latter is the Windfall Profit Tax (WPT), an

positive effect of such a measure, its net cost to the government could be relatively small over time. The tax incentive could be tied to a price ceiling above which it would not apply. This would ensure that if the market provides sufficient incentive, government support ceases.

SINCE OIL IMPORTS WILL INCREASE UNDER ALMOST ANY SCENARIO, THE GOVERNMENT SHOULD ENHANCE THE ABILITY OF AMERICAN COMPANIES TO DIVERSIFY FOREIGN SUPPLY SOURCES.

Another tax incentive with a ceiling price could be a waiver of taxes on production from temporarily shut-in stripper wells that are reopened after the waiver becomes effective. The provision would, of course, have to have a historical cutoff point to prevent flowing wells from being shut in to qualify. DOE has estimated that the incentive, which is tax-neutral, could raise stripper-well production by about 200,000 barrels per day. At current prices, this would reduce annual oil imports by about \$1.2 billion.

Finally, since oil imports will increase under almost any scenario, the government should enhance the ability of American companies to diversify their foreign supply sources. Some of our current policies may be having an unintended opposite effect. American companies venturing abroad are being saddled with the added political risk of U.S. restrictions or proscriptions on their activities in countries whose governments are considered unfriendly or inimical by our government. In the case of Libya, for instance, our government may have had overriding policy reasons for forcing U.S. oil companies out of that country. But as GAO stated in its

May 21, 1987, report on Libya trade sanctions, "the short term effect of the sanctions on the U.S. oil companies has been a loss of revenue while Libya continues to reap the full benefit of their oil field operations."²

According to the GAO report, "U.S. oil firms are more concerned about the long-term consequences of the sanctions. Total oil reserves in Libya are estimated at 22 billion barrels, making the potential loss of the U.S. firms' access to a portion of these reserves significant."

Another example of this policy is Angola, a substantial oil exporter, all of whose production is in the hands of U.S. and Western European companies. The Congress, which disapproves of the government of Angola, has sought to penalize it by passing legislation (over the opposition of the Treasury) removing the foreign tax-credit provision for U.S. oil companies operating there. It has also threatened to deny Angola "most-favored-nation" treatment on its exports to the United States, which would double import tariffs. Again, the burden of the penalty is falling not on the foreign government but on the American companies: Angola is simply letting more European companies come in.

The government has taken a similar approach in some other countries in which American companies are exploring for oil. But it is a fact of life that unfriendly governments come and go. Thus, current U.S. policy adds to the inherent political risk that U.S. firms take in operating in some foreign countries by imposing the added uncertainty of U.S. political considerations. This may discourage American companies from diversifying their foreign oil sources — and therefore do American interests more harm than good. ●

1. *Energy Security: An Overview of Changes in the World Oil Market* (GAO/RCED-88-170).

2. *International Trade: Libya Trade Sanctions* (GAO/NSIAD-87-132BR).