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## AMERICA'S LOOMING ENERGY CRISIS: THE CAUSES

### INTRODUCTION

As world energy prices have fallen, the United States has been increasing its imports of foreign oil and reducing its efforts to discover new domestic supplies. This could be bad news for Americans. According to the report of the Reagan Administration's high-level task force on energy and national security released last month, America is once again falling into a perilous dependence on imported oil.<sup>1</sup> Overall U.S. oil imports rose from 5,067,000 barrels per day (b/d) in 1985 to 6,061,000 b/d in 1986, an increase of 994,000 b/d, or nearly 20 percent. And between February 1986 and February 1987, U.S. domestic oil production fell from nearly 9.2 million barrels per day (mbd) to just under 8.3 mbd, a decline of nearly 10 percent. Moreover, when natural gas liquids (used as a component of most refined petroleum products) are taken into account, the loss of U.S. oil production resulting from the world price collapse reaches 1.1 mbd.

The threat to U.S. energy security arises not just from the volume of imports, but from the source. During the last year, oil imports from Organization of Petroleum Exporting Countries (OPEC) members, and particularly from Saudi Arabia, have skyrocketed. Meanwhile imports from more secure sources outside OPEC's sphere, such as Canada and Britain, have plunged. In fact, U.S. oil imports from Saudi Arabia rose from a low point of 27,000 b/d in September 1985, to 664,000 b/d in January 1986, a 24-fold increase. By January 1987, Saudi exports to the U.S. stood at 873,000 b/d. Overall, OPEC exports to the U.S. rose by 51.2 percent in 1986, while non-OPEC oil exports to the U.S. declined by an almost identical percentage.

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This is the first in a series of studies analyzing national security aspects of United States energy supplies. Future papers will identify regulatory obstacles to energy development, ways to increase oil and gas output, and development of nonpetroleum energy sources.

1. Energy Security: A Report to the President of the United States. DOE/S-0057 (Washington, D.C.: U.S. Department of Energy, March 1987).

**Crippling U.S. Ability.** What is particularly disturbing about the price collapse which precipitated this trend is that it is crippling America's ability to maintain its domestic oil reserve base. If steps are not taken to restore the vitality of the domestic oil industry, America's dangerous dependence on imported oil will sharply accelerate. The most telling evidence that this could happen is found in the precipitous fall-off in domestic oil and gas exploration.

The number of operating rotary drilling rigs is generally accepted as the most reliable indicator of the level of oil exploration taking place in the U.S. The average count has fallen alarmingly, from 3,970, at its 1981 peak, to just 964 rigs in 1986, a level that is 17 percent below that of 1973, the year of the OPEC embargo. Indeed, the reduction in operating rigs that occurred in reaction to the world oil price collapse was so great that by June 1986, when the rig count hit its low point of 686, it was below any time since World War II. And even though it did recover to a small degree--largely thanks to investors trying to beat the introduction of the new tax code--it still remains at pre-embargo levels.

**Economic and Political Threats.** Since it is necessary to continually replace oil that is used with new discoveries, the drop in domestic exploration assures that the decline in U.S. oil production will continue. This in turn means that the level of imports required to operate the domestic economy will increase. America's vulnerability to economic and political threats from OPEC thus will become steadily greater.

U.S. oil imports during the first months of 1987 still exceeded those of 1973. Further, the sharp decline in Alaskan oil expected to begin early in 1988, coupled with the drop in domestic production resulting from the lack of drilling in the lower 48 states, virtually guarantees that America's import dependence will rise to more than 50 percent by 1990, and could be as great as 70 percent by 1995. Even more disturbing, two-thirds of these new imports are likely to come from unstable nations located in the Middle East, once again opening the door to the possibility of politically motivated oil interruption wreaking havoc with the U.S. economy.

The rapid collapse of the domestic oil industry means that further delay in action by Washington could make it impossible to avoid a security catastrophe. Oil exploration requires a unique combination of equipment, skilled manpower, and entrepreneurial spirit. However, the devastation of America's oil-producing regions is resulting in the rapid dismantling of the infrastructure of oil exploration. In 1986 alone, more than 150,000 oil workers lost their jobs; hundreds of firms once engaged in exploration went out of business. In addition, all 20 of the steel plants specializing in producing drilling pipe for oil wells closed their doors in 1986. And countless other firms in the oil well service industry either closed or severely curtailed their operations as well.

**Complacency Cost \$2 Trillion.** Yet the average American still thinks in terms of oil "gluts" and cheap gasoline. Moreover, industries such as transportation, steel, and petrochemicals have benefited enormously from lower energy costs. Understandably, both individuals and businesses tend to focus on the short-term benefits of cheaper oil, giving rise to a sense of complacency about oil imports. This attitude is eerily similar to that which existed before the 1973 embargo. Since that year, the United States paid out more than one-half trillion dollars for imported oil, two-thirds of which went to OPEC nations. When the full cost of all of the resulting inflation, unemployment, and slower growth are

taken into account, complacency in the early 1970s cost the U.S. as much as \$2 trillion. Similar complacency in the late 1980s could be even more costly.

What is least understood about the threat implicit in oil import dependency is that the underlying factors are in large degree a product of federal policies. Washington set the stage for the first embargo and made it far more severe by undercutting the domestic oil industry's profitability and controlling prices, ensuring a needless deterioration of America's energy security in the coming decade.

Complacency continues to pervade Washington. Lawmakers ignore how rapidly America's energy security is eroding. Unless Congress and the Administration wake up to the full dimensions of the looming oil crisis, and recognize that regulations and laws have exacerbated the crisis, Americans are destined to experience a political and economic shockwave far more damaging than that of 1973.

### **THE TIGHTENING FEDERAL NOOSE**

U.S. oil import problems can be traced to 1969, when Washington began erecting the regulatory obstacles and imposing punitive taxes on the domestic oil industry that led the nation's current oil import dilemma. The most significant actions were the imposition of tough environmental regulations by Congress and the reduction of the oil depletion allowance from 27.5 percent to 22 percent. These seemingly small steps signaled a pattern of policy which had severe implications during the 1970s.

#### **Land Use Restrictions**

Among the most damaging environmental regulations imposed since 1969 have been restrictions on the way federal lands can be used for oil exploration. The federal government controls activities on some 775 million acres of public land, or roughly one-third the total land area of the U.S. The activities allowed on a tract of federal land is determined by the category into which is placed. If a tract is designated "wilderness," the restrictions are so severe that no permanent structures or roads can be built. Even firefighting is normally prohibited.

The use of restrictive classifications such as wilderness are intended to preserve unique and sensitive ecosystems for posterity. Increasingly in the 1970s, however, such classifications became a tool of environmental activists bent on preventing mineral development. One favorite tactic was to take advantage of Section 603 of the Federal Land Management Policy Act to lock up tens of millions of acres from mineral exploration. This section requires that Congress review all tracts of federal land that the Department of the Interior's Bureau of Land Management is studying for potential inclusion as "wilderness" areas. While the review is taking place, these "wilderness study areas" are treated as though they are wilderness and closed to mineral exploration.

Overuse of both the "wilderness" and "wilderness study" designation during the 1970s has closed to exploration tens of millions of promising acres for potential oil and gas discoveries. Many other environmental restrictions inhibit oil exploration. Example: in Alaska, some 80 million acres were set aside in 1971 for possible classification as national parks, wildlife refuges, and other restricted categories by the Secretary of the Interior under the provisions of the Alaska Native Claims Settlement Act. Example: Congress has

restricted sharply the ability of companies to explore the offshore areas of the U.S. Although it is expected that as much as 60 percent of future oil and gas discoveries will be made offshore, successive congressional moratoria on drilling have foreclosed many of the most promising tracts to exploration.

### **Restrictions on Capital Formation**

Other congressional actions erode the U.S. potential for energy security by undermining the ability of domestic firms to attract capital. Oil and gas exploration is a high-risk investment. On average, only one "wildcat" well in five succeeds in discovering a new, economic reserve. Even so-called "development wells" (those drilled in existing fields) are successful only about 80 percent of the time. In addition, unlike other forms of business such as manufacturing, oil production does not result in the accumulation of a stock of capital equipment, structures, or other assets. To the contrary. The main capital of an oil producer is the oil deposit itself, which over time will be consumed or "depleted." So if an exploratory well is unsuccessful, there remains little or no asset base to salvage in order to recoup a portion of the investment.

Even in the case of a successful well, once the oil is produced, no significant assets remain. Thus, to stay in business, a producer must continually make new discoveries to replace depleted assets. Acknowledging this fact, Congress in 1918 enacted the "depletion allowance" for the oil industry. It was intended to perform the same function for oil producers that depreciation did for manufacturers.

**Capital Formation.** In 1969, Congress reduced the percentage depletion permitted to oil companies. Then in 1974, a law eliminated depletion for all but a small number of independent oil producers. So doing, lawmakers took away one of the oil industry's most important capital formation tools. Since exploratory wells or "rank wildcats" were so risky, wells could not be financed through traditional means, such as bank loans, available to other industries. Instead, most wildcats were financed either through limited partnerships among private investors or through savings from company income. But with the loss of the depletion allowance, oil exploration became far less attractive to private investors, and internal cash flow was also reduced.

Price controls imposed by Richard Nixon in 1971, and extended by Gerald Ford in 1975, merely compounded the problem. These controls erected an enormous barrier to the normal operation of the oil market. They virtually assured that shortages eventually would develop.

**Boom and Bust.** These tax disadvantages and price controls have proven to be particularly damaging because the oil industry has been characterized by "boom and bust" cycles throughout its history. During times of perceived shortage, for instance, when oil prices rose, the prospect of profit would inspire a flurry of investment. As new oil sources were discovered, the inevitable glut would collapse prices or force them down sharply. At this point, new investors would enter the picture, purchasing at a discount the leases on producing properties discovered during the "boom," and proceed to develop and produce the oil reserves.

A classic case of this was the career of "Dad" Joiner, the legendary Texas wildcatter who in 1930 discovered the huge East Texas field. When prices collapsed after his discovery, he

sold his leases to H.L. Hunt for just \$50,000, creating the basis of the multibillion dollar Hunt fortune.

When price controls were imposed and extended, the normal pattern of investment in exploration during times of high prices was interrupted. Thus in 1979, when foreign oil suppliers were able to charge Americans an average of \$20.19 for a barrel of crude oil, federal regulations and taxes meant that domestic producers were receiving only an average of \$12.64 for their oil. The differential constituted a huge windfall for America's foreign oil suppliers, at the expense of its domestic producers. Even when controls were lifted in 1981, the situation remained inequitable because of the Windfall Profits Tax imposed in 1979 on domestic producers.

**Assure Future Supplies.** Through 1984, windfall profit tax collections exceeded \$72 billion. Given the oil industry's history of reinvesting profits in the search for new reserves, much of this money would have expanded America's proved reserve base to assure continuing future supplies. If even half the amount had been available for such investment, given the finding costs for oil that prevailed in the 1970s, the domestic proved reserve base would now be at least two-thirds larger, sharply reducing the threat from imports.

### **Constraints on Natural Gas**

Washington-inspired roadblocks also have retarded development of gas reserves as an alternative energy source. Until quite recently, most natural gas was discovered "accidentally" by companies looking for oil. Thus any reduction in oil exploration also reduces natural gas discoveries. To make matters worse, even when a gas reserve is discovered, a host of federal rules, ranging from the price controls first imposed in 1954 to use restrictions imposed under the Carter Administration, often keeps the gas from coming to the market.

Limitations on the development and use of domestic natural gas supplies are particularly damaging to the nation's energy security because natural gas is the one fuel which is completely interchangeable with oil in most applications, and it is available in large amounts domestically. Recent advances in motor fuel additives make it possible to use significant amounts of methanol produced from natural gas in automobiles. And with only minor modifications to the fuel system, conventional automobiles can also be converted to Compressed Natural Gas. Since 97.4 percent of all vehicles in the U.S. currently are powered with petroleum based fuels, the potential for natural gas to reduce oil consumption in this area is enormous. Yet restrictions as a result of the Fuel Use Act on the ability of industry to use natural gas as widely as would otherwise be the case and Environmental Protection Agency limitations on the methanol content of motor fuels continue to keep natural gas from reaching its full potential.

The U.S. currently consumes around 16 trillion cubic feet (Tcf) of natural gas annually. The domestic reserve base of so-called conventional natural gas could easily sustain an additional 2 Tcf of annual consumption for 50 years. If gas from so-called unconventional sources such as tight sands or coal seams is included, supplies could easily last two centuries or more.

The drop in domestic oil drilling could lead to a natural gas shortage within a few years. Like oil reserves, natural gas reserves must be replaced continually as they are consumed.

## IMPLICATIONS FOR NATIONAL DEFENSE

At the end of World War I, Britain's Lord Curzon stated: "The Allies floated to victory on a sea of oil." He could as easily have qualified his statement to say "American" oil, because in both the First and Second World Wars, the U.S. provided more than 80 percent of the petroleum for the war effort. In World War II especially, oil was critical to Allied success. One of the most intensive Allied efforts during the war was aimed at denying Germany access to the strategically critical Romanian oil fields at Ploesti. In modern conflicts, oil likely will play an even more important role.

Most contemporary military strategies for nonnuclear conflicts are based on an assumption that forces will be highly maneuverable and rely heavily on airpower. Indeed, 68 percent of America's military consumption of petroleum products even in peacetime goes to jet fuel. In just a limited conflict--on the order, say, of Vietnam--military needs for direct fuel use would rise by more than 1 mbd. Increased oil use by industry to support the war effort would increase by even more than that amount. America's growing dependence on oil imports raises an alarming specter: if a conflict were combined with an embargo of foreign oil supplies, the U.S. might be unable to field an army--literally.

**Limited War.** Given current trends in drilling and the impending decline of Alaskan production, U.S. domestic production by 1990 easily could fall to between 6.5 mbd and 7 mbd. By then, domestic consumption, according to the Department of Energy, could be between 15.8 mbd and 11.2 mbd. Two-thirds of the required imports likely would come from the Persian Gulf. This means that the potential loss of supply from an interruption of oil deliveries from the Gulf could range roughly between 5.9 mbd and 7.5 mbd. At the same time, the total national requirement in a limited war could be expected to rise by around 3 mbd for direct military and civilian use. In the case of full mobilization, the increased requirement could be 6 mbd.

If an oil import disruption thus coincided with a military conflict, the U.S. could find itself short by between 8.9 mbd and 13.5 mbd. Even with the full use of the Strategic Petroleum Reserve and a drastic curtailment of nonessential oil consumption, the interruption could make the mobilization and effective operation of U.S. armed forces nearly impossible.

**Policy Constraints.** Even in peacetime, the evolving U.S. import dependence severely constrains the Administration's ability to exercise its foreign policy. The extent to which Middle East oil has been a factor in foreign policy was demonstrated dramatically by the parade of Reagan Administration witnesses called by Congress to testify on the shipment of U.S. arms to Iran. In virtually every case, including those of Secretary of State George Shultz, former National Security Advisor Robert McFarlane, and former CIA Director William Casey, the witnesses testified that a major reason for initiating the arms initiative was concern over the future of the oil reserves of the Persian Gulf. Even Ronald Reagan cited oil as a concern.

The sale of Airborne Warning and Control System (AWACS) aircraft to Saudi Arabia, in 1984, was also justified to congressional opponents in large part on the basis of protecting American oil supplies. In addition, the U.S. has made an enormous investment in establishing forward bases near the Persian Gulf, and in creating a Rapid Deployment

Force capable of protecting military forces in the region. Mounting imports from Arab OPEC suggests that U.S. foreign policy will face even greater constraints in the future.

### **WINDOW OF VULNERABILITY**

Because of the precipitous decline in oil and natural gas exploration that began in 1986, the U.S. cannot avoid a period of increased vulnerability to import disruptions. In 1986, the number of active American drilling rigs fell to the lowest levels in four decades. And the rate of oil and natural gas wells completed in 1987 is proceeding at a rate roughly one-third that of 1981.

Since there is a three to five year lead time from the point at which an onshore well is drilled and the time oil comes into production, the worst consequences of the past 15 months collapse of oil and gas drilling will not emerge fully until 1990. While these short-term effects of the lack of drilling are unavoidable, the phase of deep decline can be reduced and even reversed--as it was in 1981--if incentives for drilling are put in place and if federal obstacles to the oil market removed.

If the worst consequences of import dependence are to be avoided, Congress and the Administration must take decisive action now to avoid the incipient energy crisis by removing the market uncertainties that government action has fostered. This element of uncertainty, based on the oil industry's bitter experience of previous government action, in many ways stands as the preeminent barrier to private investors, and has been greatly exacerbated by actions on the part of the Reagan Administration. These actions include:

- ◆◆ Administration tax planners twice since 1983 have raised the specter of repealing some of the remaining oil industry tax incentives. And while the 1986 tax reform package wisely left the provisions untouched, the possibility that they might be repealed had a chilling effect on investment in oil and gas development.

- ◆◆ The Reagan Environmental Protection Agency has been actively considering classifying as industrial wastes what are called drilling muds--substances used to lubricate the shafts of an oil drilling bit and to plaster the sides of the hole being drilled. This would impose an estimated \$30 billion in cleanup costs on the oil drilling industry.

- ◆◆ The Reagan Administration often has not effectively opposed such unwise congressional actions as the special tax on oil to help pay for the Superfund.

- ◆◆ The Administration and Congress have dragged their feet on natural gas decontrol. Indeed, the Administration's only truly significant success in regard to oil and gas policy was to speed up the decontrol of oil prices initiated by President Carter.

The release of the Department of Energy report of the task force on energy and national security is an encouraging sign that the Reagan White House is beginning to take the matter of energy dependency seriously. Yet it remains unclear whether the White House is willing to pursue an aggressive policy to secure America's energy future.

**Losing Oil Reserves.** To do so, it must break out of its short-term mindset. It is true that inflation moderated in part because of lower energy prices in 1986. It is also true that

many domestic industries benefited from those lower costs. However, it is equally true that the U.S. lost at least one-half billion barrels of proved reserves as a consequence of early abandonments of so-called stripper wells that became uneconomic, lost 300,000 jobs in oil exploration and related industries, and that imports rose to 38 percent of domestic oil needs during the third quarter of 1986 (stock drawdowns moderated the import rise in the fourth quarter) and settled at around 36 percent by early 1987. These levels exceed the 34.5 percent import levels of 1973.

Thus the short-term gains of low prices are leading to a long-term dependency. Inevitably this will give rise to higher future prices. If history is any guide, these long-term costs will far exceed any short-term benefits now being realized.

## CONCLUSION

America once again has wandered into energy complacency. It is a complacency that could be shattered at any moment by a new Arab embargo. Only concerted and immediate action by the President can avoid the worst consequences of such an import disruption. America has plenty of energy at its disposal--in the form of domestic oil resources and alternatives to oil.

The development of these resources is constrained by past policies and threatened by proposed new ones. Rather than working for a secure energy future, the federal government still is working against one. The warning signs of a renewed dependency on imported oil are looming large on the horizon. The only question is whether the Congress and the Administration will recognize them in time.

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