

Emergency Preparedness for Interruption of Petroleum Imports into the United States

**A Summary Report of
the National Petroleum Council**

September 10, 1974

**Proposed Final Draft
Subject to Approval by the
National Petroleum Council
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Prepared by the National Petroleum Council's
Committee on Emergency Preparedness
Carrol M. Bennett - Chairman, with the Assistance of the
Coordinating Subcommittee, James S. Cross - Chairman

NATIONAL PETROLEUM COUNCIL

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Industry Advisory Council

to the

U.S. DEPARTMENT OF THE INTERIOR

Rogers C. B. Morton, *Secretary*
Jack W. Carlson, *Asst. Secretary for Energy and Minerals*

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INTRODUCTION

The objective of the National Petroleum Council's Committee on Emergency Preparedness is to assess the capability of the United States to cope with a sudden but temporary interruption of energy supplies, and to review the options open to the country to minimize the impact of such an interruption. This denial could occur with little warning as a result of actions over which the United States has no direct control, including situations of a non-military nature.

Ultimately, the only effective protection against an import interruption is a combination of conservation by consumers and developing, to the maximum extent possible, the Nation's domestic energy resources. The Nation has not provided adequate encouragement for either conservation or for the development of these resources. The United States has an adequate energy resource base which, given sufficient time and a proper political and economic environment, can be converted into available supplies. The National Petroleum Council's U.S. Energy Outlook Report examined the long-term requirements for energy in the United States and the changes in government policies and economic conditions that would be required to improve the domestic energy supply situation.*

Even prior to the Middle East conflict in October 1973 and the subsequent embargo, this Nation was faced with growing energy problems. During the past 15 years the United States has not adequately developed its domestic energy resources, and has thus become increasingly dependent on imported oil. The embargo of last winter and the approximate quadrupling of foreign oil prices have necessitated a reassessment of our national energy posture. "Project Independence" has directed attention to the need for accelerating development of indigenous energy sources to stop the trend of increasing reliance on foreign energy sources and to reduce this reliance to an acceptable level.

At this time, there is considerable uncertainty associated with long-range forecasts of U.S. energy supply and demand. Particularly uncertain is the future level of oil imports. Increased prices for energy will dampen demand, but the degree of response is difficult to assess. Consumption will also be affected by the extent of voluntary and mandated conservation.

Higher prices will encourage the development of domestic energy resources. Already there has been an increase in the number of wells drilled per year, a marked reversal of the declining trend of recent years. However, long-range development of domestic energy resources will also be affected by the industry's expectations regarding price controls, tax changes, environmental regulations and rate of leasing of government lands. The availability of capital, skilled manpower and materials, as well as the development of new technology, are also

* NPC, U.S. Energy Outlook--A Report of the National Petroleum Council's Committee on U.S. Energy Outlook (December 1972)--hereafter referred to as the U.S. Energy Outlook Report.

important in influencing the rate of development of domestic energy resources.* But in the short and intermediate term the United States has no apparent alternative except to remain heavily dependent upon foreign oil.

The substantial dependence of the United States on petroleum imports has major national security implications. Recognizing these implications and the need for an effective emergency preparedness plan, the Secretary of the Interior requested the National Petroleum Council to undertake a "comprehensive study and analysis of possible emergency supplements to or alternatives for imported oil, natural gas liquids and products in the event of interruptions to current levels of imports of these energy supplies" (see request letters, Appendix A). In the request letters, it was pointed out that, in a period of rapidly increasing dependence on imported petroleum, "it becomes mandatory that the Nation's emergency preparedness program to ensure supply of petroleum be improved without delay."

In response to the Secretary of the Interior's request, the National Petroleum Council established a Committee on Emergency Preparedness under the chairmanship of Carrol M. Bennett, Chairman of the Board, Texas Pacific Oil Company, Inc. The Committee is assisted by a Coordinating Subcommittee, chaired by Dr. James S. Cross, Director, Economics and Industry Affairs, Sun Oil Company. (For a listing of industry members of the Committee and its Subcommittees, see Appendix B.)

On July 24, 1973, the National Petroleum Council transmitted to the Secretary of the Interior a report entitled Emergency Preparedness for Interruption of Imports into the United States, An Interim Report. A Supplemental Interim Report, released on November 15, 1973, focused on the analysis of a 1974 interruption and included an initial appraisal of the impact of the oil embargo which began in mid-october, 1973. Subsequently, Short-Term U.S. Petroleum Outlook--A Reappraisal was transmitted to the Secretary of the Interior on February 26, 1974. That report considered significant events occurring during the embargo through January 1974.

A distinction must be drawn between the underlying tight petroleum supply situation and the sudden and limited duration curtailment addressed in this report. Difficult domestic supply conditions result from trends which have been established over a period of years, and it is expected that these conditions will persist for at least the next several years. The solutions available to minimize the impact of a short-duration interruption of imports are fundamentally different from those required to correct the long-term domestic supply situation. Solutions to the long-term supply shortages lie in providing a free marketplace and an economic and regulatory climate which encourages an adequate degree of energy self-sufficiency, rather than in temporary emergency measures.

*The short-term availability of materials and manpower is assessed in a separate report of the NPC's Committee on Emergency Preparedness: Availability of Materials, Manpower and Equipment for the Exploration, Drilling and Production of Oil During 1974-1976, published September 10, 1974.

In the event of a short-term interruption of a significant portion of oil imports, it would be extremely difficult for the economy to readjust itself without resorting to emergency measures. Such measures include substantial curtailments in consumption, emergency production measures, reliance on crude and products which have been stockpiled, and maximum utilization of available alternate energy sources. Obviously, most emergency measures can only be maintained for weeks or months rather than for years.

This final report describes the impact of the 1973-1974 embargo on the U.S. energy supply/demand situation and on the economy, and seeks to provide guidance as to the actions that should now be undertaken as a precaution against the possibility that a sudden and limited duration interruption of imports of an assumed 3 million barrels per day could occur.



SUMMARY

ANALYSIS OF THE RECENT EMBARGO

From mid-October 1973 to mid-March 1974, the United States experienced an embargo on oil shipments from the Arab exporting countries--the fourth sudden oil imports stoppage of political origin in the past 25 years. This was, however, the first time the country found itself without spare domestic production capacity to offset such an interruption and shortage conditions resulted. By 1973, imports had reached 6.2 million barrels per day (MMB/D) or 35 per cent, compared with a total supply of 17.6 MMB/D. The embargo sharply reduced the amount of oil exported to the United States and other countries, and at the same time world prices for crude oil and petroleum products escalated very rapidly.

As shown in Figure 1, the effects of the embargo on U.S. supplies were not felt immediately. The long supply lines from the Middle-East to the United States provided considerable lag time between the initiation of the embargo and the onset of shortages in the U.S. By mid-December, however, reduced receipts of petroleum became apparent, with the full impact of the embargo occurring during January, February and March of this year. During the first quarter, imports averaged 2.2 MMB/D below earlier projections.

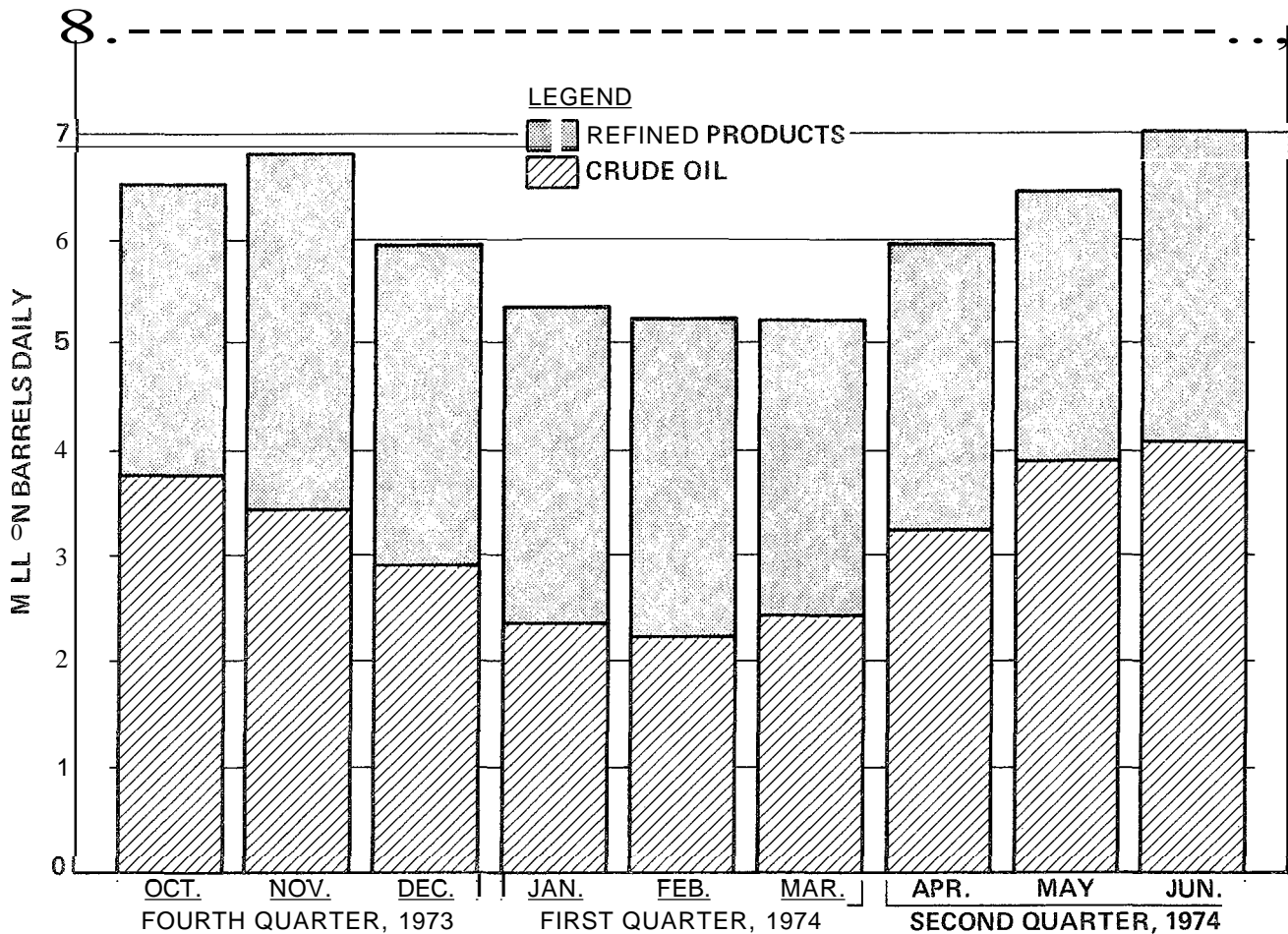


Figure 1. Total United States Petroleum Imports.

Four methods of dealing with the situation were available:

- Reduction of Consumption
- Conversion to alternate fuels
- Emergency production
- Government allocation programs.

Reduction of Consumption

During the first quarter of 1974, oil consumption was reduced approximately 2.7 MMB/D or 14 percent below prior expectations, as shown in Table 1. This reduction was accomplished in part by voluntary actions such as car pooling, reduced space heating and lighting, more efficient airline operations and the amounts accounted for by mandatory actions such as lower speed limits. Higher prices and warmer-than-normal weather during the 1973-1974 winter also caused consumers to use less fuel.

Conversion to Alternate Fuels

The Committee estimated earlier that conversions of gas and oil burning industrial and utility boilers to coal during the first 90 days of an import interruption could displace 250 thousand barrels per day (ME/D) of oil (23 million tons of coal). In view of the constraints involved in coal production, transportation and environmental standards, it was considered that actual savings might be within the range of 40 ME/D to 120 ME/D. During the first quarter of 1974 actual savings were only 61 ME/D. Coal convertibility on short notice proved to be a complicated and difficult problem, and its future emergency

TABLE 1
OIL CONSUMPTION REDUCTIONS-FIRST QUARTER 1974
(Million Barrels Per Day)

<u>Factors Influencing Consumption</u>	<u>Reductions Realized*</u>
Conservation and Curtailment	1.01
Warmer than Normal Weather	.44
Conversion to Alternate Fuels and Reduced Exports	.10
Other†	1.15
Total Reductions	2.70
 <u>Product Categories Affected</u>	
Motor Gasolines	.60
Aviation Fuels	.19
Middle Distillates	.78
Residual Fuels	.78
All Other (Including Exports)	.35
Total Reductions	2.70

* Bureau of Mines actual data compared with pre-denial projections of first quarter demand by the Independent Petroleum Association of America (IPAA).

† Includes price effects, lower economic activity, nonidentifiable conservation efforts, product unavailability, etc.

potential is limited. Imports of electricity from Canada accounted for 26 MEID, making a total of 87 MEID gained from conversion to or use of alternate fuels.

Emergency Production

Increasing domestic production above normal rates was considered but not employed as another means of covering the emergency shortfall. There are several significant oil fields in Texas which, on a temporary basis, have producing capability above maximum efficient rates (MER).^{*} Also, if properly equipped, the Naval Petroleum Reserves could have been of significant benefit. However, these emergency capabilities were not utilized during the 1973-1974 embargo.

The Texas fields are currently producing at maximum efficient rates established by the Railroad Commission of Texas. In order for these fields to be produced at higher rates, it would be necessary for the Commission to hold hearings to establish that these higher rates could be accommodated for a given period of time without damage to the reservoirs and without reduction of ultimate recovery. Resolution of other problems--including installation of additional facilities, intrafield equity considerations and relaxation of environmental and conservation regulations in regard to gas flaring--would have been required to achieve higher production rates. The Naval Petroleum Reserves are controlled by the U.S. Navy's Office of Naval Petroleum Reserves and under existing law can be produced only when the Secretary of the Navy, with the approval of the President, finds that the reserves are needed for national defense. Production must then be authorized by a joint resolution of Congress. The legal and economic problems involved in additional-production from private oil fields and from the Naval Petroleum Reserves precluded a timely response during the recent emergency.

Government Allocation Programs

The Federal Energy Office (FEO) undertook the task of allocating available petroleum products in order to continue essential activities and to minimize adverse effects on agriculture and industry, including use of petroleum as a raw material for non-energy products. The primary thrust of the FEO regulations was to insure that essential activities be given priority access to available supplies, that these supplies be equitably allocated and that adverse effects on employment and the general economy be minimized.

While the government allocation program reduced the severity of the effects of the embargo, many problems arose because of economic distortions which inevitably result when government controls replace market forces. The ability to cope with these problems was affected by the inability to use the services of qualified industry personnel and the normal difficulties involved in creating and effectively operating a new regulatory agency on short notice.

^{*} MER is defined as the highest rate of production that can be sustained over a long period of time without reservoir damage and significant loss of ultimate oil and gas recovery. Production in excess of MER for sustained periods may result in both loss of recovery and premature loss of producing capacity.

ECONOMIC EFFECTS OF THE EMBARGO

Gross National Product

The cutback in petroleum consumption during the first quarter was accompanied by a 7-percent decrease in real Gross National Product (GNP), whereas a modest increase had been generally expected prior to the embargo. While the primary effects on industry were held to a minimum, the secondary repercussions resulting from disruptions in world energy markets and from consumer reactions were significant. Gasoline shortages and rising fuel prices triggered a demand shift toward smaller cars, which slowed activity in domestic automotive and related industries. The tourist industry and vacation areas were hard hit. Repercussions in money markets contributed to slowdowns in the housing and construction trades. The cumulative short-term effects of the embargo on the economy, although substantial, were eased by various favorable consumer, industry and government actions.

Employment

Unemployment during the first quarter averaged 5.2 percent of the labor force, 0.5 percentage points higher than the rate experienced prior to the embargo'. This less than expected increase in unemployment was partly due to the short duration of the embargo and also to the FEO policy of maintaining employment by granting higher priority to industrial users of oil.

Prices

Beginning before the embargo and accelerating during the embargo, the rapid and large increase of world oil prices resulting from producing country government actions had additional impact on the U.S. economy as well as the world economic system. Energy costs are diffused throughout the economy; each commodity and service becoming more costly depending upon its energy component. In the United States, it has been estimated that about one-fourth of the increase in wholesale prices in 1974 could be attributed to the increase in energy costs.

Demand Elasticity

Prior to the embargo, at then current price levels, the demand for petroleum was considered to be quite inelastic. Recent observations of price and consumption changes in gasoline markets, at current prices, suggest that a degree of elasticity exists. However, response in the U.S. is still modest compared with that noted in other countries. In recent months, European consumers have reduced energy usage to a much greater degree than U.S. consumers in response to higher prices that prevail in Europe. In order to improve decisions relative to meeting future petroleum needs, more information and analysis are needed in this area.

International Trade

The upward shift in oil prices has had a profound effect on the balance of payments between oil producing and oil consuming nations. In 1974, the United States may be faced with a dollar outflow attributable to oil imports

on the order of \$25 billion. Funds flowing into oil producing countries could approach \$100 billion this year. Unsettled conditions in world money markets may result depending upon how these funds are spent or invested.

SUPPLY AND DEMAND OUTLOOK

Short-Term

Due to physical constraints during the first half of the year and higher prices, oil consumption will experience little or no growth in 1974. Because of increased drilling and recovery efforts, domestic oil and gas supply will decline at a slower rate than earlier anticipated. Import volumes may therefore be about the same order of magnitude as in 1973, with inventories being restored and supplies currently adequate to meet demand. The economy has now entered a transitional period between an era of abundant supplies of cheap energy and an era of high prices and insecure supply.

Long-Term

In order to better evaluate the longer term, the Committee found it necessary to have an updated energy supply/demand outlook. The NPC staff polled several private sources of current U.S. energy supply and demand projections and developed an average or "medium case" to reflect a consensus of data received. The range of energy consumption projections is shown in Figure 2.

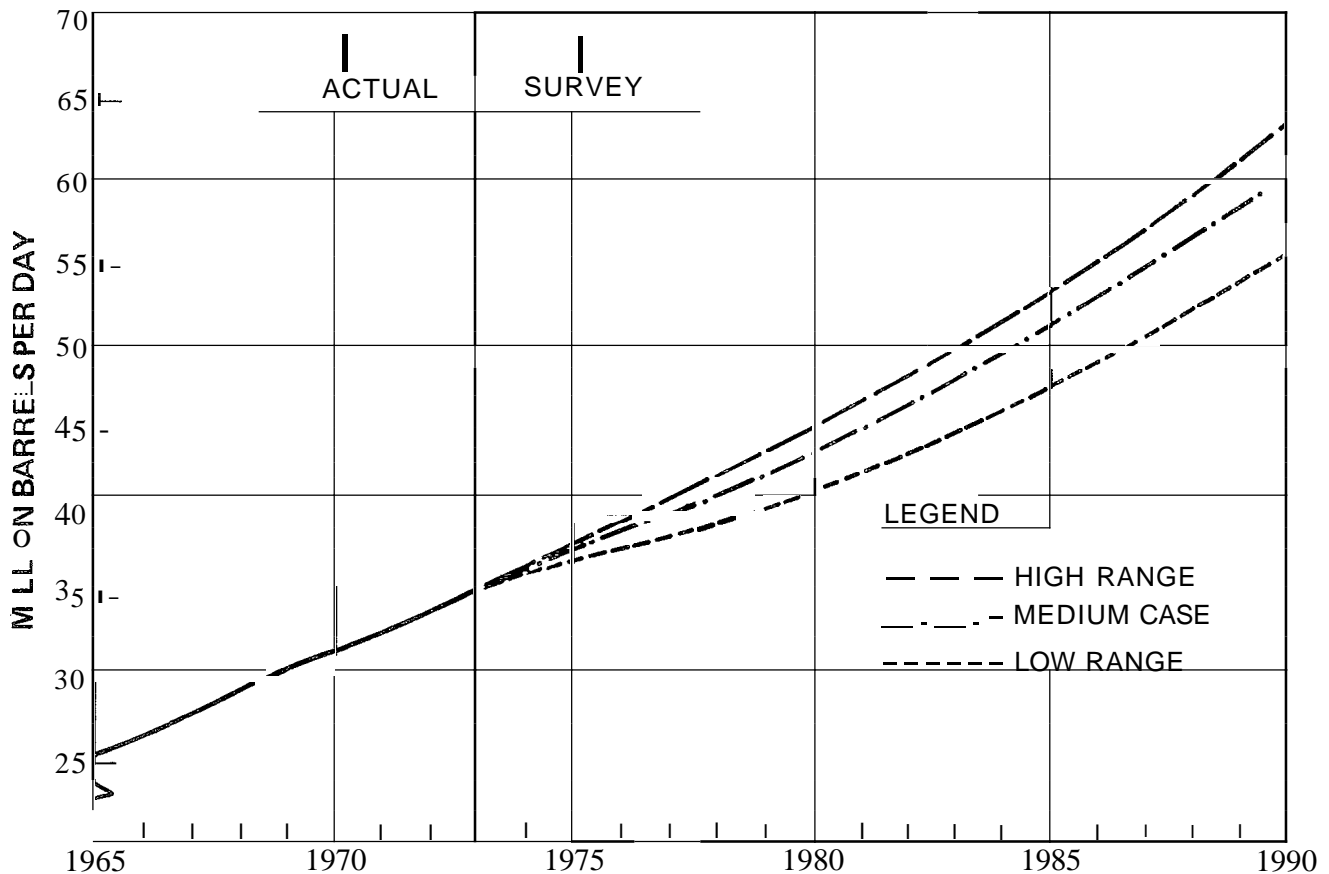


Figure 2. Energy Consumption (Million Barrels Per Day Crude Oil Equivalent).

Energy consumption in the "medium case" is projected to grow, between 1972 and 1985, at an average annual rate of 3.2 percent, the high range being 3.6 percent and the low range 2.6 percent per year. This range of projections is below the annual growth rate of the past 5 years (4.5 percent) and that of the past 25 years (3.7 percent). The high case in this current survey tracks fairly closely the low-demand case projected in the NPC's U.S. Energy Outlook Study of 1972. The underlying assumption in these projections is that energy conservation measures will be effective and the economy will be using less energy than previously assumed.

As shown in Table 2, a wide range of petroleum import projections was received in the survey, depending upon the assumptions made relative to energy growth and to the rate of growth of other energy sources. The medium case

	<u>1978</u>	1980	1985	1990
High	9.4	10.2	12.5	12.0
Low	5.2	5.3	5.4	4.0
Medium Case	7.8	7.8	8.4	8.1

projection reaches 8.4 MMB/D by 1985, after which it tapers to 8.1 MMB/D in 1990. The range in 1990 is between 12 MMB/D and 4 MMB/D. The Committee elected to use the medium case as the basis for its analysis. The details of the total liquid petroleum balance are shown in Figure 3.

Conventional production of crude oil and natural gas liquids is estimated to reverse its recent decline and grow at an average rate of 1.3 percent, reaching a level of 13.2 MMB/D in 1985 and 13.9 MMB/D by 1990. Syncrude is not expected to reach significant proportions until the mid-1980's and is projected at 1.2 MMB/D in 1990. Net imports, having expanded rapidly in 1973, are projected to increase gradually from their present level to over 8 MMB/D in 1985, after which they are expected to decline. Total oil supply in this medium case is projected to grow at the rate of 2.8 per cent per year between 1972 and 1980, reaching 20.6 MMB/D in that year. Between 1980 and 1990, the projected growth rate is 1.4 per cent per year, reaching 23.4 MMB/D in 1990. In the medium case, net imports as a per cent of total oil supply would approach 37 per cent in 1985 and 34 per cent in 1990. Within this time frame, the Committee addressed itself to the question of what should be done to prepare for any future import denial.

AVAILABLE ALTERNATIVES FOR RESPONSE TO FUTURE IMPORT DENIAL

Among the steps the Committee considered for response to a future denial are:

- Reduction of consumption
- Conversion to alternate fuels

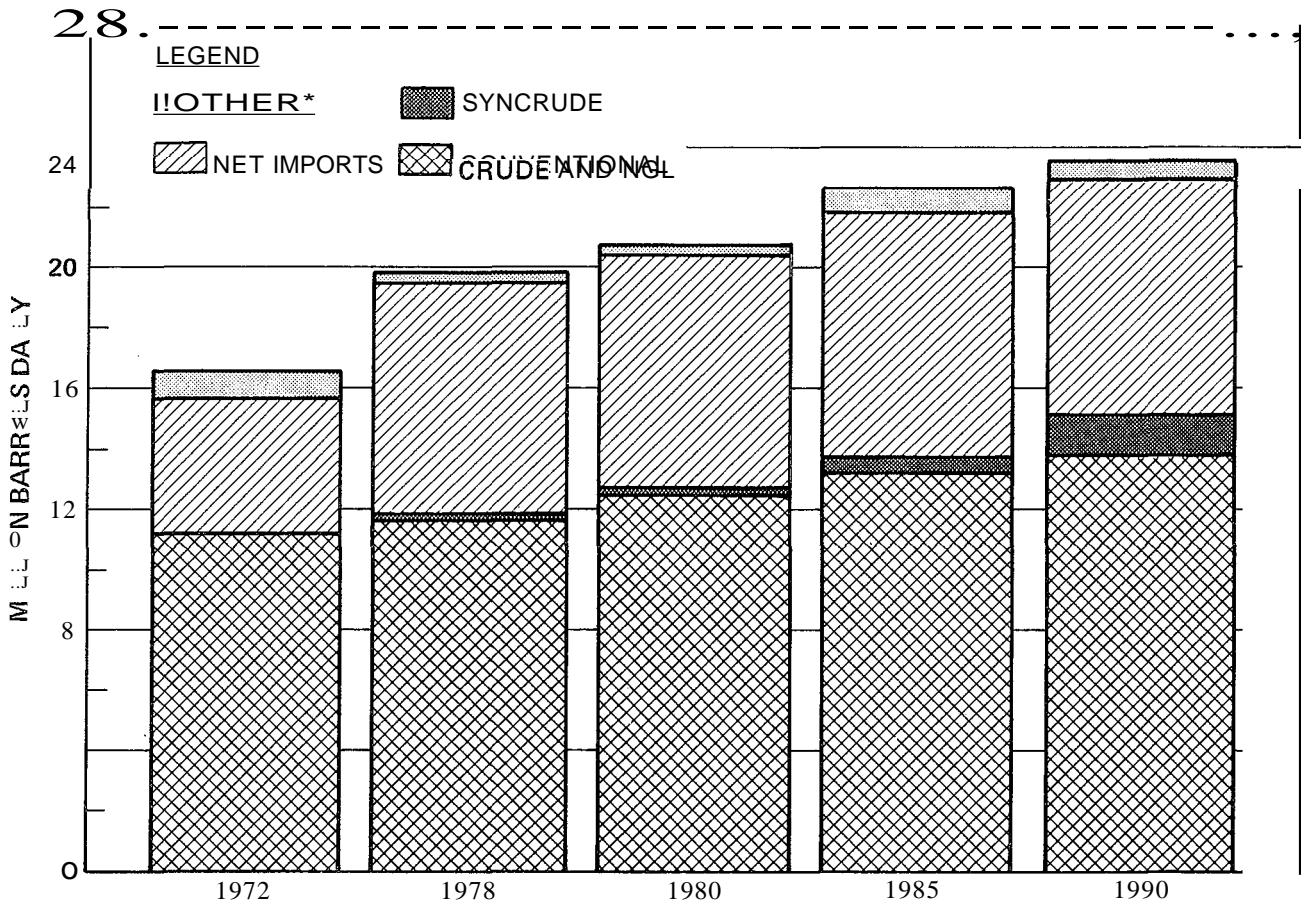


Figure 3. Total U.S. Supplies of Liquid Petroleum--Medium Case.

- Emergency production
- Strategic storage.

Conversion to Alternate Fuels

It has been previously assumed that, in a denial period, some relief could be obtained by converting industrial and utility boilers from oil or gas to coal. The opportunities are primarily in the electric utility sector but are quite limited. The medium case projection of fossil fuel use in electricity generation indicates a trend away from oil and gas to coal. Furthermore, the recently passed Energy Supply and Environmental Coordination Act of 1974 provides the authority to require oil and gas burning power plants to switch to coal. The law also permits the Federal Government to direct that new power plants use coal as the primary energy source. Since a high degree of the potential for conversion to coal will be realized over the next several years on a non-emergency basis, there will be little or no future emergency coal substitutibility for oil and gas in industrial or utility plants.

Emergency Production

As noted earlier, legal and economic problems involved in additional oil and gas production from private fields and Naval Petroleum Reserves precluded their use during the recent embargo. The potential from private fields will

decline over time and this source can be counted on to provide only a small amount of the required volume of emergency supplies in the event of an imports curtailment.

Reduction of Consumption

During a denial period, energy consumption can be reduced by voluntary or mandatory measures. The quantification of savings through voluntary steps is difficult because it requires an assumption of the level of compliance on the part of the public. Substantial potential reductions exist in every energy-use sector, such as increased car pooling in transportation, thermostat adjustments and reduced lighting in the residential and commercial sectors, and increased operating efficiencies in the industrial and utilities sectors. In many cases, consumption can be voluntarily reduced promptly and with little or no capital investment. In other instances, reductions effected by such measures as increased insulation and automotive design improvements require investments and time to produce results.

The voluntary actions which would be most effective in responding to an unanticipated interruption in energy supply would be those steps which the public would be willing to implement freely. The effectiveness or compliance level of these measures would relate directly to the cost to the individual or business. Therefore, it has been assumed that only those measures requiring little or no investment would be effective in a short-term emergency situation. A review of such activities in each of the major energy-use sectors indicates potential consumption reductions of approximately 1.0 MMB/D and 1.1 MMB/D in 1980 and 1985, respectively.* Since the level of reductions achieved through voluntary curtailment is almost completely dependent upon public compliance, it is imperative that an extensive public information program be initiated at the time of any emergency to ensure favorable public response.

In the event that voluntary demand reductions are not sufficient to bring demand into balance with supply, mandatory actions such as allocation and rationing would be required.

Emergency Standby Petroleum Supplies

There are three basic alternatives for providing standby petroleum supplies to offset a sudden loss of imports. These are: (1) shut-in or reduction of production from domestic oil fields, (2) storage of crude after production from underground reservoirs and (3) storage of refined petroleum products. Several major factors must be considered in developing an optimum emergency standby supply system. First, standby supplies must be located so that facilities existing at the time of an emergency can transport such supplies to locations where needed at rates sufficient to replace imports that cannot be offset by other means. Second, the capability to construct associated facilities and obtain sufficient crude and/or product to fill programmed storage in the desired time frame must be assessed. Finally, the total cost to the Nation of available alternatives must be weighed against the degree of protection provided.

*These estimates include the savings from mandatory speed limit reductions and legislation similar to that passed in California to reduce electricity usage.

The alternative of providing standby supplies by shutting-in or reducing production from domestic oil fields has major disadvantages. Such action would simultaneously reduce the supply of indigenous oil and gas to the U.S. economy. Reduced crude production would have to be offset by increased imports, if available; however, imported crude would probably have a high sulfur content and many U.S. refineries cannot process such crude. This would also make the U.S. even more dependent on imports and would adversely affect the U.S. economy and balance of payments. Administration of such a program would be extremely complex. For example, provisions would have to be made to compensate owners of shut-in production for reduced current income and, in many cases, reduced ultimate recovery. Establishment of fair compensation would be difficult and litigation on behalf of such owners would probably result. In addition, such action would cost the Nation from 5 to 10 times more per barrel of daily production capacity than security storage of crude or product.

Security storage of refined products or crude after production can be located above ground in steel tanks or underground in caverns leached in salt or mined in hard rock. The primary advantage of steel tank storage is locational flexibility and the ease with which supplies can be integrated into the existing petroleum logistical system. The major disadvantage of aboveground tank storage is the high cost--\$3.80 to \$7.00 per barrel, depending on location, type of storage and local conditions. The availability of steel for timely construction of very large scale tankage projects is also of concern.

In contrast, storage in salt domes can be provided for \$0.60 to \$0.85 per barrel if the volume to be stored exceeds 100 million barrels. Many salt domes on the Gulf Coast are capable of accommodating storage projects of several hundred million barrels. Extensive experience with such storage in the United States has proven its safety and reliability. Since crude or product is stored in large caverns, very high redelivery rates are possible. For example, a single 200 million barrel project might require only 20 to 40 wells and be capable of a redelivery rate of several million barrels per day during an emergency. Although other underground storage alternatives were also evaluated (mined caverns, salt beds, abandoned mines, depleted reservoirs), storage in salt domes has the lowest cost. Such storage is normally located 2,000 feet below the surface and is, therefore, more secure against natural disasters and sabotage than steel tank storage.

Crude oil storage in salt domes appears more practicable than refined product storage. The potential for weathering is reduced, and any quality problems that might occur with crude oil could be corrected during refining. Problems of quality control, questions of what grades, types and volumes of finished products to store and the seasonal nature of major product demands would exist for high-volume security storage of refined products over an extended period of time in a salt dome environment. Additionally, transportation of product from salt dome storage to terminals would be more difficult and expensive than for crude. Thus, if a product security storage program is implemented, storage aboveground in higher cost steel tankage is probably the best alternative. It is recognized that residual fuel oil imports present a special case because such imports are concentrated on the East Coast.

Because of the apparent inability to protect against a substantial import interruption by any other means, it is concluded that a substantial volume of crude security storage is required. Such storage should be located in Gulf Coast salt domes. A security storage volume of about 500 million barrels in

combination with other available supplies would provide protection commensurate with similar programs in effect in other consuming nations. Proposed new Gulf Coast deepwater terminal and pipeline facilities, which should be in service by 1978, will be capable of transporting imported crude to a large percentage of Midwest and Rocky Mountain refineries. Therefore, salt dome storage projects should be located near deepwater terminal tank farms to ensure easy distribution of security storage crude to refineries during an emergency.

Location of security storage crude for East Coast refineries in Gulf Coast salt domes will save \$4 to \$5 per barrel in storage cost. Gulf Coast deepwater terminals can be designed to permit loading of security storage crude for delivery to the East Coast during an emergency. However, use of foreign flag vessels to augment the U.S. fleet may be required to ensure timely delivery during an emergency. Need for storage on the West Coast will depend on supply self-sufficiency there. Factors to be considered include the impending availability of North Slope crude and flexibility to ship crude from the Gulf Coast.

Leaching of several hundred million barrels of salt dome storage could be completed in about 6 years. Significant storage could be ready to fill about 1979, which is consistent with the anticipated startup of Gulf Coast deepwater terminals. Therefore, completion of a 500 million barrel crude storage program in the early 1980's appears feasible if crude can be made available for fill.

Foreign crude could be utilized for fill; however, cost, timely availability, and high-sulfur content are of concern. Production of certain domestic fields above MER to provide storage fill appears to be an unlikely possibility. Elk Hills (NPR-1) crude is low in sulfur content, and represents a reliable large volume low cost source of supply. Another potential source of oil to fill security storage would be Federal Government royalty entitlements. An advantage of using this oil is that it would be clearly established that it would be available to meet either public (defense) or private needs under emergency conditions without introducing difficult problems of ownership, equity or compensation for inventory holding costs. It must be recognized, however, that commitment of royalty oil to security storage would increase oil import requirements in order to balance supplies with current consumption.

RECOMMENDATIONS

In submitting its recommendations, the National Petroleum Council's Committee on Emergency Preparedness feels that the following points should be emphasized:

- *We will likely be more dependent on foreign oil in the future.* The extent of increased U.S. dependence on imported oil will largely be determined by our ability to conserve energy and increase domestic energy production. In the event of greater dependency on imports, a future embargo would have more severe and lasting effects on the U.S. economy if proper preparation has not been undertaken.
- *We cannot base plans on favorable weather conditions.* The winter of 1973-1974 was 8 percent warmer than normal in the United States and almost 5 percent warmer than the previous year. The resulting reduction in consumption of all heating fuels significantly reduced the severity of the oil shortage. This favorable circumstance cannot be assumed for future planning.
- *Emergency conservation potential will diminish over time.* Until the fall of 1973, energy in the United States was relatively inexpensive and many users were little concerned with energy conservation. Due to widespread public response to the need to conserve during the recent embargo and price increases following the embargo, major efforts are being made to conserve energy. Thus, there will be less potential for quick and easy conservation measures, and future supply shortages will more rapidly begin to impinge on critical energy requirements.
- *Public support of emergency measures must be secured through avoidance of misunderstanding as to the reality, the extent and the impact of an interruption.* Industry and government were ill-equipped to communicate the complex nature of the impact of the embargo on the economy and on the industry's complicated logistical system. As a result, the public became occupied with the question of whether an oil shortage even existed. Industry reporting procedures were not well enough developed to provide the kind of detail required to monitor the shortage effectively. In the event of a future embargo, the government, the communications media and industry need to be better equipped to appraise and communicate the problems to the American public resulting from an interruption in supply.

The Council realizes that years, perhaps decades, will be required to achieve the goal of energy self-sufficiency. In the interim, specific though flexible procedures must be developed to prevent any future interruption of energy supplies from exerting unacceptable pressures upon the U.S. economy.

In the interest of emergency preparedness, the National Petroleum Council submits the following recommendations:

1. *The United States must adopt and impZement nationaZ energy policies designed to increase the Nation's self-sufficiency in energy.*

Sound and consistent government policies are required if energy conservation is to be encouraged and if the various energy suppliers to this country are to develop maximum domestic energy supplies and thereby minimize the need for and cost of emergency preparedness to protect against a sudden energy emergency. The key elements of such policies were outlined in the NPC's report, *U.S. Energy Outlook*, and are reaffirmed in this report:

- The United States must adopt broad national objectives for solving the energy problem.
- Healthy, viable and expanding energy industries should be encouraged by government.
- Import policies should not hinder the growth of domestic refining capacity.
- Field prices of natural gas should be allowed to reach competitive levels.
- A balance should be sought between environmental goals and energy requirements.
- Both the government and industry should continue to promote energy conservation and efficiency of energy use.
- Access to the Nation's energy resource potential underlying public lands should be accelerated.
- Energy research and development of technology should be accelerated.
- Tax policies should foster the discovery and development of domestic energy resources.
- The United States should support its nationals engaged in energy operations abroad.

2. *The United States should develop an operational definition of an energy emergency.*

At the outset of the recent embargo, the Nation found its emergency mechanisms inappropriate because emergency preparedness plans were based solely upon a military or defense-type emergency. An important lesson of the embargo is that the United States needs to define an "energy emergency," thus empowering its administration to take appropriate emergency actions in the event threatened or actual economic sanctions or boycotts are applied against this country. The form of these powers should be such that a high degree of flexibility in administration is allowed. Such powers would serve the country both as a deterrent to external economic pressure and as an effective means of response should such pressure be applied.

3. *Standby emergency preparedness plans should be developed to allow participation by industry personnel.*

Through the Emergency Petroleum and Gas Administration (EPGA), the United States has access to the knowledge and experience of experts and technicians within the petroleum industry. The expertise of these individuals is the cornerstone of the EPGA's effectiveness and organization in a declared national emergency.

It became clear in the initial stages of the recent embargo that because of the "conflict of interest" and antitrust statutes, personnel in industry would not be able to respond to the government's request to staff the Energy Allocation Planning Task Force (EAPTF) and the Office of Petroleum Allocation (OPA). It is apparent that this inability to serve on the part of industry personnel seriously affected the government's program. A future energy emergency is likely to produce the same result unless corrective action is taken.

To obviate this problem and to provide the government with the personnel necessary to deal effectively with such emergencies would require substantial amendments to the existing conflict of interest and antitrust statutes.

4. *The Federal Government should reassess the potential and use of the Naval Petroleum Reserves in a future emergency.*

Of the four Naval Petroleum Reserves, only NPR-1 (Elk Hills in California) has any near-term potential producing capacity for use in an emergency. In 1972, the Comptroller General estimated about \$69 million would be required to develop NPR-1 to its maximum efficient rate of 267,000 barrels per day. This rate might be achieved within 2 to 3 years. Regardless of the future dispositions of this reserve, the National Petroleum Council recommends that the requisite development be completed since it would greatly enhance the value of NPR-1 to the Nation.

Because of the uncertainties regarding the Nation's future energy position, the Council recommends that decisions on the ultimate disposition of whatever potential capacity is developed in Naval Petroleum Reserves be made after the reserves have been evaluated.

5. *The United States should develop standby emergency consumption reduction measures.*

The United States should have available emergency consumption reduction programs specifically designed for responding to an energy supply interruption and available for immediate use. While the FEO rapidly implemented the provisions of the Emergency Mandatory Petroleum Allocation Act of 1973, this legislation was not totally appropriate for an embargo situation. In addition, calls for voluntary use curtailment were often hastily conceived, and the consumer, though willing, was often confused. Any standby energy demand reduction measures developed for use in future emergencies should be strongly oriented toward consumer education and cooperation. While a mandatory rationing system should be carefully developed, its use should be restricted until the effectiveness of other measures has been obtained. The gasoline retailing techniques (odd-even day sales, Sunday closings, minimum sale requirements, staggered and posted hours of services, etc.) used during the recent embargo suggest that substantial reductions in gasoline consumption can be managed without resorting to a coupon rationing system.

6. *In an emergency situation, options to increase domestic energy supplies through additional oil and gas production and additional use of coal should be utilized.*

The volume of temporary emergency oil production available from private fields is quite small compared to the potential size of an import interruption. This capacity above MER can be expected to decline to a negligible amount by the early 1980's. There are a number of legal and regulatory constraints to the effective utilization of such capacity. However, despite these problems such short-term emergency production could provide a degree of protection during the remainder of this decade and should be made available if practicable. This will require that state and federal regulatory agencies cooperate in developing acceptable procedures that will permit such emergency production.

Opportunities for converting utilities from oil or gas to coal will be limited since significant conversion is underway or planned. Since some small potential in dual-fired plants will remain through the end of the decade, conversion of these plants should be part of an emergency preparedness plan. In order to keep the Nation's future options as open as possible, it appears prudent to require such new oil or gas-fired power plants as may be approved to construct and maintain coal handling and burning facilities. Provisions for variances in environmental regulations during an emergency will assure the contribution of coal substitutability in an emergency.

7. *The United States should develop an emergency petroleum security storage system.*

The United States should create a petroleum security storage system that, in combination with other available measures, will provide adequate time to react positively to a substantial, sudden interruption in petroleum imports. Objectives concerning the ultimate size and structure of such a program will undoubtedly change with time because of the constantly changing world political and economic environment. However, it is clear that a substantial volume of petroleum security storage is needed within the United States and that efforts to implement such a program should begin immediately because of the long construction lead times involved. Such a program must, of course, consider future U.S. obligations which may arise from international emergency energy sharing programs.

First consideration should be given to providing crude oil security storage to protect domestic refinery runs. This study indicates that 500 million barrels of crude storage in combination with normally available inventories will provide 90 to 180 days of supply for a large percentage range of crude imports presently foreseen. Crude storage can be efficiently located in one or more Gulf Coast salt dome projects and integrated with the crude transportation system that will serve Gulf Coast deepwater terminals. Specific circumstances and specific logistical problems could require storage of fuel oil at strategic locations on the East Coast.

Among other important considerations to be resolved are the extent of government and/or industry financing and administration of the emergency storage and its fill. The Council feels that security storage should not be utilized until after (1) a proper declaration of an energy emergency by government and (2) appropriate voluntary and mandatory standby consumption and reduction measures have been implemented.

Appendices



United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

DEC 5 - 1972

Dear Mr. True:

The United States is in a period of rapidly increasing dependence on imported petroleum. Associated with this dependency is the high risk involved to the Nation's economic well-being and security in the event these needed, imported energy supplies are interrupted for any reason. With such an alarming trend it becomes mandatory that the Nation's emergency preparedness program to insure supply of petroleum be improved without delay.

Over the past years, the Council has provided the Department of Interior with many outstanding studies which have contributed directly to preparedness for a national emergency. The Council's recent comprehensive energy outlook study indicates national policy options which will minimize dependence on imported petroleum over the long term. However, the study does not examine and evaluate alternatives, possible emergency actions and the results of such actions in the event of a temporary denial or marked reduction in the volume of imported petroleum available to the Nation during the next few years ahead.

The Council is therefore requested to make a comprehensive study and analysis of possible emergency supplements to or alternatives for imported oil, natural gas liquids and products in the event of interruptions to current levels of imports of these energy supplies. Where possible, the results of emergency measures or actions that could be taken before or during an emergency under present conditions should be quantified. For the purpose of this study only, assume that current levels of petroleum imports to the United States are reduced by denial of (a) 1.5 million barrels per day for a 60-day period, and (b) 2.0 million barrels per day for a 90-day period.

Of particular interest are supplements to normal domestic supply such as: the capability for emergency increases in production, processing, transportation and related storage; the ability to provide and maintain an emergency storage capability and inventories; interfuel substitution

or convertibility of primary fuels in the major fuel consuming sectors; side effects of abnormal emergency operations; gains in supply from varying levels of curtailments, rationing and conservation measures; gains from temporary relaxation of environmental restrictions; as well as the constraints, if any, imposed by deficient support capability if an extraordinary demand occurs for manpower, materials, associated capital requirements and operating expenses due to emergency measures.

Such studies should be completed as soon as practicable, with at least a preliminary report presented to me by July 1973.

Sincerely yours,

Hollis M. Dole

A handwritten signature in cursive script, appearing to read "Hollis M. Dole".

Assistant Secretary of the Interior

Mr. H. A. True, Jr.
Chairman
National Petroleum Council
1625 K Street, N. W.
Washington, D. C. 20006



United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In Reply Refer to:
MOG

JAN 22 1973

Dear Mr. True:

In our letter to you of December 5, 1972, we asked that the National Petroleum Council make a comprehensive study and analysis of possible emergency supplements to or alternatives for imported oil, natural gas liquids and products in the event of interruptions to current levels of imports of these energy supplies. We are pleased that the Council has agreed to undertake this study.

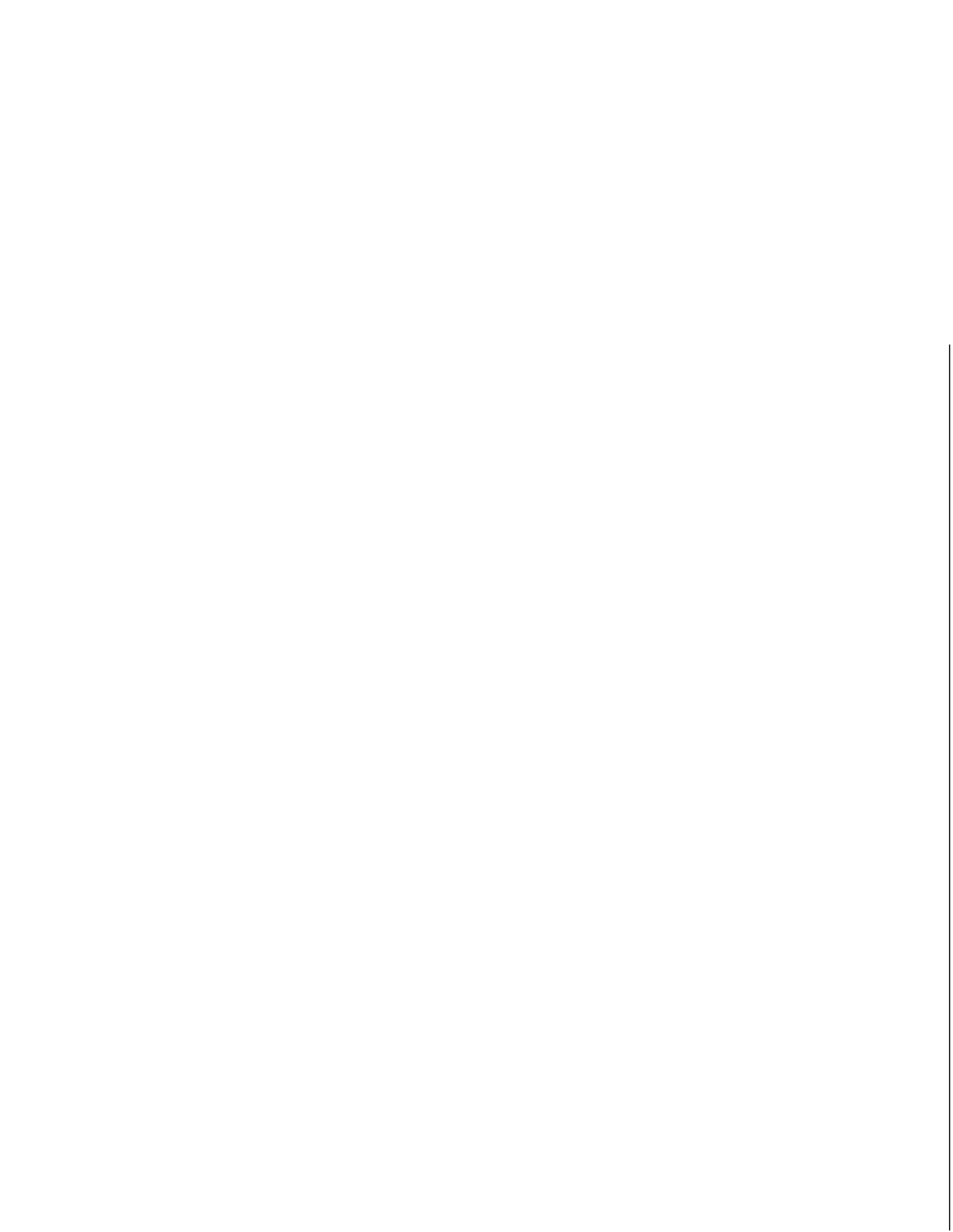
Our request letter set out several assumptions regarding petroleum supply levels which we now believe require clarification. Rather than assuming a reduction in petroleum imports to the United States of (a) 1.5 million barrels per day for a 60-day period, and (b) 2.0 million barrels per day for a 90-day period, it would be more useful to assume a denial of (a) 1.5 million barrels per day for 90 days, and (b) 3.0 million barrels per day for a period of 6 months. It is anticipated that the Committee will consider the current and predicted mix between crude and product imports in determining the impact of the assumed denials.

We wish to reaffirm that a preliminary report should be submitted by July 1973.

Sincerely yours,

Secretary of the Interior

Mr. H. A. True, Jr.
Chairman
National Petroleum Council
1625 K Street, N.W.
Washington, D. C. 20006





United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In Reply Refer To:
EOG

OCT 26 1973

Dear Mr. True:

One of the scenarios in the National Petroleum Council's Emergency Preparedness Study considers a major interruption in foreign oil supplies to the United States as of January I, 1974.

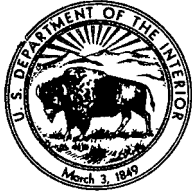
Though this phase of your Study is nearing completion, recent events have added new urgency to this scenario. Therefore, I ask that you quickly draw together the work which you have accomplished regarding a January I, 1974 supply interruption and submit it to the Department of the Interior at the earliest possible date.

Sincerely yours,

^{1,1}
Stephen A. Ashfield

Assistant-Secretary of the Interior

Mr. H. A. True, Jr.
Chairman, National Petroleum Council
1625 K Street, N.W., Suite 601
Washington, D.C. 20006



United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

DEC 21 1973

Dear Mr. True:

The present energy situation makes it imperative that increased domestic exploration for energy sources, particularly oil, be undertaken at the earliest possible time.

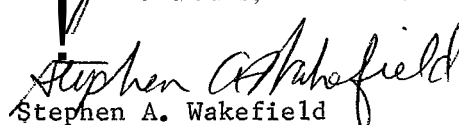
So that a rational program might be developed the Department of the Interior has an urgent need to know the availability of materials, manpower and equipment necessary for the exploration, drilling and production of oil during the next two years. Any shortages of materials, manpower or equipment needed for these tasks should indicate the probable limitation on drilling activity. The duration and causes of such shortages, together with any possible measures to alleviate them, should be set forth.

At our request the National Petroleum Council's Committee on Emergency Preparedness is presently conducting a study to examine and evaluate alternatives, possible emergency actions and the results of such actions in the event of a temporary denial or marked reduction in the volume of imported petroleum available to the Nation.

In our letter to you of December 5, 1972, requesting the National Petroleum Council to undertake the above study one of the items mentioned was the capability for emergency increases in production. Because the information needed on the availability of materials, manpower and equipment for exploration and production falls within this category I am requesting that you have the National Petroleum Council's Committee on Emergency Preparedness appoint an appropriate subcommittee to undertake this task.

Because of the urgency of this matter your early response and cooperation will be greatly appreciated.

Sincerely yours,


Stephen A. Wakefield
Assistant Secretary



Mr. H. A. True, Jr.
Chairman
National Petroleum Council
c/o True Oil Company
Post Office Drawer 2360, Casper, Wyo. 82601

Save Energy and You Serve America!

The following industry representatives have participated in this study.

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Manager, Tanker Planning
Standard Oil Company of California

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Richard B. Guerin
Staff Economics Specialist
Forecasting, Planning & Economics
Shell Oil Company

H. L. Hilleary
Senior Staff Economy Analyst
Comptroller's Department
Standard Oil Company of California

A. R. Talpt
Staff Director
Industry Supply Economics
Standard Oil Company (Indiana)

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National Petroleum Council

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Supply Systems Planning
Coordinator
Supply Planning
Exxon Company, U.S.A.

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and Production Division
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W. A. Daniel
Regional Planning Coordinator
Exploration and Production
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Shell Oil Company

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