# CURRENT KEY ISSUES
relating to
# ENVIRONMENTAL CONSERVATION
the
# OIL AND GAS INDUSTRIES

AN INTERIM REPORT OF THE
NATIONAL PETROLEUM COUNCIL

June 22, 1970

AN INTERIM REPORT

ON

CURRENT KEY ISSUES RELATING

TO

# ENVIRONMENTAL CONSERVATION-THE OIL AND GAS INDUSTRIES

June 22, 1970

Prepared by the

NATIONAL PETROLEUM COUNCIL'S COMMITTEE
ON ENVIRONMENTAL CONSERVATION-THE
OIL AND GAS INDUSTRIES

W. W. Keeler, *Chairman*

*with the assistance of the*

COORDINATING SUBCOMMITTEE

Leo A. McReynolds, *Chairman*

# FOREWORD

At the request of the Assistant Secretary of the Interior (see Appendix A), the National Petroleum Council, an officially established advisory body to the Secretary of the Interior, representing virtually all segments of the U.S. oil and gas industries, has undertaken a comprehensive study concerning the petroleum industry and conservation of the environment. Because of the urgent national concern about the environment, the Council deems it appropriate and timely to submit this Interim Report so that it may be taken into consideration by policy makers.

This Interim Report is designed to call attention to those environmental issues and related fundamental factors affecting our society in which the domestic oil and gas industries have a vital interest and which they consider most crucial at this time. These issues and factors are not treated in detail in this report. They will be dealt with in depth along with many others in the final report, which is expected to be completed in the latter half of 1970. The final report will, therefore, constitute the comprehensive study requested by the Assistant Secretary of the Interior and will cover a variety of questions not specifically covered in this report.

In order to comply with Interior's request, the National Petroleum Council established a special Committee on Environmental Conservation--the Oil and Gas Industries, under the chairmanship of W. W. Keeler, Chairman of the Board, Phillips Petroleum Company, and the co-chairmanship of Hon. Gene P. Morrell, Deputy Assistant Secretary of the Interior--Mineral Resources. The Committee is assisted by its Coordinating Subcommittee, with Leo A. McReynolds, Director of Research for Petroleum Products and Environmental Conservation, Phillips Petroleum Company, as its chairman. The Subcommittee is co-chaired by Dr. Wilson M. Laird, Director of the Office of Oil and Gas, U.S. Department of the Interior. A list of the committee and subcommittee memberships is included in Appendixes B and C, respectively.

CONTENTS

PART ONE

# GENERAL FACTORS*

--Introduction

--Law and Regulatory Policy

--Economics of Environmental Conservation

Few problems in recent times have generated such widespread concern as the preservation of man's environment. All segments of society--the scientific community, government at all levels, private industry, and the public in general--are agreed that a high priority must be assigned to efforts to preserve and, where needed, to improve our environment so that it is consistent with man's physical well-being and is aesthetically appealing.

The petroleum industry is vitally and directly concerned with the conservation both of the environment and of our Nation's natural resources where they are found, produced, and used. For example, the petroleum industry has been in the vanguard of the conservation movement as related to the wise and beneficial use of natural resources by improving the technology and techniques of petroleum operations so as to secure maximum recovery with minimum waste.

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* The general factors described in Part One are those selected for comment in this Interim Report because they are considered to be most crucial at this time. These factors will be dealt with in depth, along with many others, in the final report.

# I. INTRODUCTION

At any point in time, society reaches an expressed or implied common consensus as to the values or goals that it wishes to be maximized. During the period since the economic depression of the 1930's and World War II, our society has sought to maximize economic goals so that the American economy would provide increasing material benefits to all Americans. In this period, through the mutual effort of the private sector and the government, ever-increasing numbers of the American people have come to enjoy improved living standards.

The tremendous economic expansion (which to a large measure has been responsible for the general well-being of our society) that has taken place in this country during the 25 years since the end of World War II, has depended on energy supplied increasingly by petroleum. Of the total U.S. energy requirement (satisfied by fossil fuels, nuclear fuel, waterpower, or other direct sources), three-fourths has been met by oil and gas, and this ratio is projected to continue with little change in the foreseeable future. There is a direct relationship between the requirement for energy and the degree of industrialization. Thus, as industrialization becomes more intensive, the need for energy grows rapidly.

In the early part of this century, neither the number of people nor the degree of industrialization was such as to cause major concern about our environment. In fact, there was very little information available upon which to base an appreciation of the potential impact of these factors upon the environment. Science has not only made possible the technological development that raises living standards, but is providing knowledge which allows an insight into the effects of these developments upon our environment.

Thus, society, including industry, the general public and governments, domestically and internationally, now have greater awareness that actions which are taken to raise living standards must be carried out not only to meet adequately the needs of a rapidly expanding population, but also to maintain the quality of the environment as well. As our knowledge has grown, it has become apparent that, to achieve higher standards of living through scientific and technological applications, those two disciplines must also be used to prevent a severe deterioration of our life-sustaining environment that could indeed be self-defeating.

Having achieved impressive economic goals in recent decades, it is appropriate that the United States along with other nations reexamine the priority of values. While greater emphasis must be placed upon the conservation of the natural environment in which we live, at the same time we must continue a rate of economic growth that is adequate to provide the resources required to achieve all of our Nation's goals at the most practicable rate.

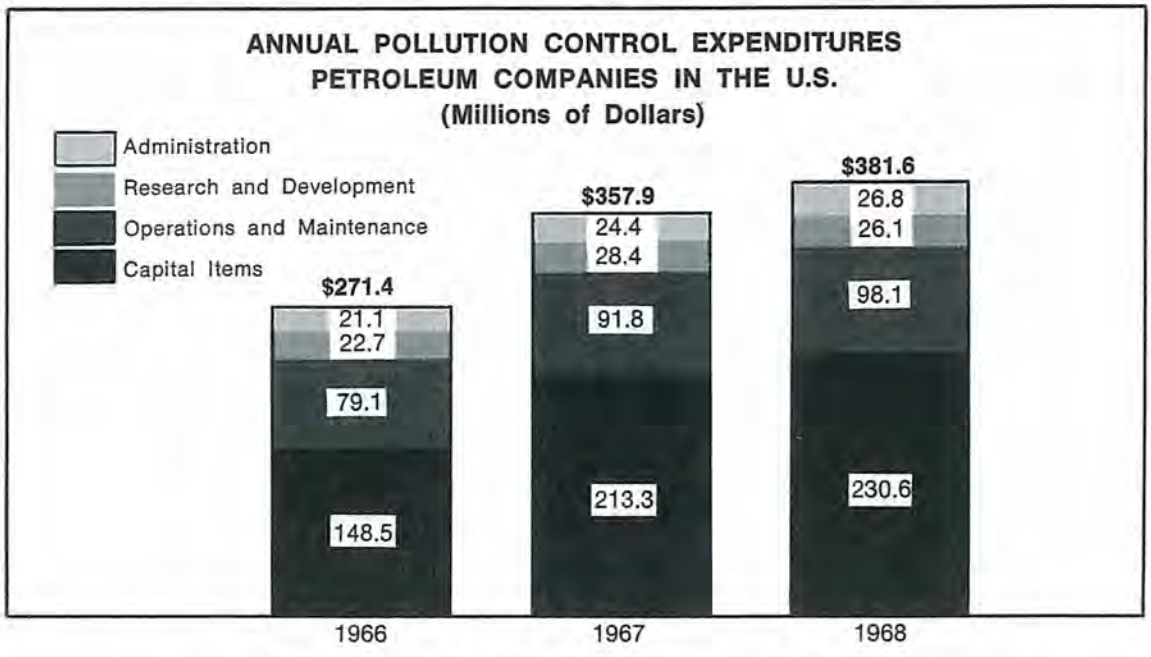
The petroleum industry shares with all other elements of society, including government, the responsibility of assuring that our environment be improved where necessary and that in all cases its quality be maintained adequate for this and future generations.

To attain environmental conservation on the most effective and economical basis, cooperation among government, industry and private citizen groups, as is sanctioned by applicable law, must be continued and expanded. In addition, such coordination of effort among industry sectors should be extended where their operations involve interfaces with one another. This coordination could extend, among other things, to planned-joint-research programs, exchanges of research results, and joint testing of pollution-control equipment and material.

The U.S. petroleum industry has expanded, is expanding, and indications are that it will continue to expand its efforts to assure that its operations are carried out in a manner fully consistent with the preservation of the kind of environment that society desires.

Investments by the petroleum industry for conservation of the environment already have been substantial and will undoubtedly increase in the future. In recent years, a major part of these investments has been for capital expenditures to control air and water pollution in refining facilities. Another major capital item has been expenditures for water conservation in the production of crude oil and gas. In addition to capital expenditures, there have been increased expenditures for research and development, as well as for the maintenance and operation of pollution-control facilities and the administration of these programs. (See Figure 1.)

It must, of course, be recognized by all that in the current process of harmonizing values which place greater emphasis upon conservation of our environment, there will be an inevitable cost to be paid. And since our complex society is itself a collective polluter of our environment, the expenditures necessary to maintain satisfactory environmental quality must be viewed as societal costs.




NOTE: 1. Based on survey in 1968 (1968 figures estimated) for the American Petroleum Institute by Crossley, S-D Surveys, Inc.
2. Survey of more recent expenditures now in progress.

Figure 1.

It is a fundamental responsibility of government, after consultation with the private sector, to determine reasonable standards of environmental quality that are to be maintained and, where remedial action is required, the period of time within which those standards are to be reached. In determining such standards and the time-period required to reach them, government should carefully take into account the cost-benefit factor and its impact upon the economy. Since environmental circumstances differ dramatically from place to place, these standards cannot and should not be expected to be reached in unreasonably short time-periods nor will they be attained uniformly throughout this country or internationally.

A highly industrialized society such as ours cannot exist without intensive utilization of natural resources. But wise management and broader acceptance of the multiple-use principle make it possible to develop the most effective means of utilizing these resources. Thus, differing interests in the environment can be reconciled and a proper use balance can be achieved, a balance that is in the best interest of society as a whole.

A rapidly increasing population, accompanied by a demand for the advantages of industrialization that has in some instances shown insufficient concern for the environment, has been

a major cause of pollution. Air and water pollution, particularly, have been further compounded by high concentrations of population in urban areas. For example, inadequate municipal sewage treatment is by far the largest single cause of water pollution. Increasing consumption of energy is an integral part of increased industrialization. If the beneficial results of energy consumption are to be properly available to all people, it is imperative that all energy be utilized as efficiently as is practicable.

While we are confident that high rates of energy consumption can be enjoyed with maintenance of satisfactory environmental standards, the interrelations of these various factors are so complex that effective solutions can be reached only by dealing with the total environmental-social system. The National Petroleum Council strongly supports an expanded integrated systems approach to the total problem and is ready to contribute its expertise and active participation to such endeavors. Apart from the oil and gas industries, the attention of some groups is being directed particularly to such major problems as the design of cities, dispersal of industry, new rapid transit, interurban-rail and air-traffic systems, remote generation of power, and other components of our civilization. All of these relate to the air-, water-, and land-pollution problems and it is important that the impact on the environment be an integral part of studies of these problems.

Each member of society has a personal responsibility to contribute to the maintenance of an adequate environmental quality. Thus, people should, through all means of communication, including public education programs, be made aware of all of the causes of pollution and the measures which the individual can take to reduce and control pollution. In reducing pollution and in improving the quality of our environment, the role of education is and will continue to be a vital one, and should be emphasized. Recognizing this fact, the oil and gas industries are expanding appropriate education programs in order to contribute to a wider understanding of these environmental conservation matters.

## II. LAW AND REGULATORY POLICY

### GOVERNMENT-INDUSTRY RELATIONSHIPS

*1. The role of government should be to define the effects of pollutants, prescribe the quality of air, water, and land to be maintained and, in general, to specify workable standards to accomplish this.*

To attempt to specify the particular method by which these standards are to be achieved usually materially lessens the likelihood that the best solutions for society will be reached. By limiting its controls to specification of performance standards, government will encourage individual innovation, with "marketplace regulation," and thus tend to obtain the optimum environmental quality control for each dollar of investment or other expenditure, yet avoiding governmental discriminations among competing enterprises. Such an approach will maintain the benefits of a traditionally free enterprise approach.

*2. Where a cooperative approach to the solution of an environmental problem would serve the public interest, the Executive Branch should clarify the extent of cooperation that is consistent with the intent of present antitrust laws and, if necessary, seek enactment of such further legislation as would be advisable to authorize the most effective means of dealing with such problems.*

Our antitrust laws play a strong role in maintaining competition and diversity of effort. They properly prohibit conspiracy or collusive action by competitors in matters affecting commerce and public economic interests. However, to achieve the goal of improving the environment, in a number of situations it may be that the best interests of society would be served if competitors or complementary industries were permitted to exchange information regarding the modification of products or procedures in the public interest.

In view of past experience in other areas, it is essential that there be clear legislative sanction where expanded cooperative efforts would serve the public interest in matters of environmental conservation. Should the Executive Branch conclude that, with appropriate and careful governmental monitoring, existing law permits a cooperative approach by industry to environmental conservation, it should define and announce procedures to initiate the desired cooperation. On the other hand, should the Executive Branch conclude that existing law raises a serious

question concerning the legality of such an approach, it should propose to Congress appropriate legislation.

FEDERAL-STATE RELATIONSHIPS

*1. The National Petroleum Council endorses the concept of a Federal-State partnership approach to environmental pollution control, reserving to the States the right, within the broad criteria established by the Federal Government to meet the national needs, to establish local quality standards for air, water, and land and the period of time within which they are to be attained.*

*This partnership recognizes that in certain instances, such as mobile sources of pollutants which may affect more than one state or nation--ships, planes, trains, and road vehicles--control of the establishment of standards and timing should be the prerogative of the Federal Government or even subject to international convention.*

The Federal Government now has the authority to intervene in navigable waters and when (1) pollution presents "an imminent and substantial endangerment to the health of persons" or (2) the States fail to adopt and enforce standards that are consistent with the federal criteria for air quality and guidelines for interstate and coastal waters. The President's new legislative proposals, generally described in his message to the Congress on the Environment, February 10, 1970, recognized the jurisdictional limitations of the Federal Government to deal with intrastate waters. Thus, federal legislation directed towards pollution control over all such waters would raise a serious constitutional question. A comprehensive approach to environmental conservation, including waters, should and, perhaps, must be based upon Federal-State coordination and cooperation, as this report recommends in other areas.

The establishment of regional air-quality standards and national emissions standards for mobile sources is proceeding under the 1967 amendments to the Federal Clean Air Act, and all 50 States have adopted water-quality standards. Many States and local governments are setting and enforcing standards and implementation plans without waiting for the Federal Government to complete the job of designating air-quality-control regions and are issuing criteria upon which State standards are to be based.

While the Federal-State partnership approach can doubtless be improved upon, for the time being the matter of air-quality standards should continue to be determined on a local basis with some latitude in standards reserved to State and local governments.

2. The establishment of regulations setting standards for industrial emissions and effluents is a matter of local concern since the natures and conditions of the receiving air, waters, and land vary dramatically depending upon locale.

## III. ECONOMICS OF ENVIRONMENTAL CONSERVATION

### COSTS AND BENEFITS

*1. The determination of environmental quality standards should carefully take into account the cost-benefit factor to society and the impact of that factor upon our economy.*

Relevant inquiries in this connection are: How clean? At what cost? With what benefit? How are these costs to be shared?

Waste loads must not be imposed on the environment that are so great as to endanger essential ecological systems or human health or to interfere unreasonably with other beneficial uses of the environment by society. However, since man must live in the environment, it will be necessary, within rational limits, to use some of its natural assimilation capacity for wastes.

Costs and benefits to society of environmental quality control must be analyzed in the total sense of losses and gains. The cost-benefit approach in this context can be illustrated by consideration of two rivers: the waters of one to be used for recreation, including swimming and fishing, and the waters of the other to be used as a source and receiver of agricultural irrigation. The qualities of the waters of these two rivers need not be the same for their respective uses. Generally speaking, users of the first river would seek waters of clear natural quality. On the other hand, users of the second river would accept a less aesthetically appealing system--at a substantially lower shared cost to all. In both cases, multiple temporary use of natural resources is obtained, with the flexibility of accommodating different uses in the future as costs and benefits warrant.

There are two basic costs involved with environmental conservation: (1) the costs of restoring environmental quality where damage has occurred, and (2) the costs of pollution reduction or elimination to prevent damage. Costs of both types directed towards conservation of the environment in which we live, whether incurred by industry or government, are an expense of society and necessarily will be assumed by society in the form of increased taxes, or decreased-tax revenue through the extension of tax incentives, or through higher prices for goods and services, or a combination of these.

*2. Where environmental quality does not meet prescribed standards, the constantly moving limits of technology and economics should be taken into account in setting realistic and stable timetables for achievement of the desired quality.*

There is an inevitable period of time involved in planning, financing, and implementing measures, and in a number of instances for developing the necessary technology, to comply with prescribed environmental standards. Thus it is essential that, after standards are determined and the time-period fixed for compliance, industry be able to rely upon the resulting schedule and not be subjected to continual schedule revisions.

In some instances technological advances may reach such a stage of development that they appear available for application in the very near future. If there is strong reason for confidence that such imminent technological advances will help to achieve pollution control objectives at lower cost, then such technology should be awaited, provided this is in the general public interest.

*3. Imposition of economic disincentives is not an effective means of environmental conservation.*

As a general matter, genuine societal problems affecting the public welfare should be approached directly by the public and its government and not through indirect avenues such as governmentally imposed economic disincentives. As a practical matter, such economic disincentives provide the option of meeting the imposed penalty and thus continuing the undesirable conduct without abating pollution. This approach also suffers from the near impossibility of selecting an equitable method of assessing charges for the vast number of potential pollutants. For example, in the case of effluents, it would be more reasonable to grant plants temporary variances from pollution control regulations, so long as the public safety is in no way compromised pending the taking of necessary measures to arrive at the desired standards.

USER FEES

*1. Industry and municipalities should and do share, equitably, both the use and cost of their respective waste treatment facilities.*

There are industry-community waste treatment systems, which are owned and operated by the industry, not the community. In these cases the community is charged for its share of the use of the facility. In like manner, where the industry utilizes

municipal waste treatment facilities, it does now and should continue to pay its fair share of the costs connected with such facilities.

2. *Where a special user fee is imposed on industrial plants, however, the extent to which those plants contribute to the support of municipal waste treatment through general taxation should be taken into account, along with industrial waste loads, in determining the amount of the fee.*

## PART TWO*

## SPECIFIC ENVIRONMENTAL CONCERNS

--Oil Spills in Water Operations

--Use of Petroleum Products

--General Perspectives

Of the most important and immediate environmental problems facing the U.S. petroleum industry, some stem in substantial part from its own operations. Some, however, are caused almost entirely by the use of petroleum products by others. The problem of oil on public waters falls generally in the first category. The two problems of sulfur in heavy fuel and undesirable automotive emissions fall in the second category.

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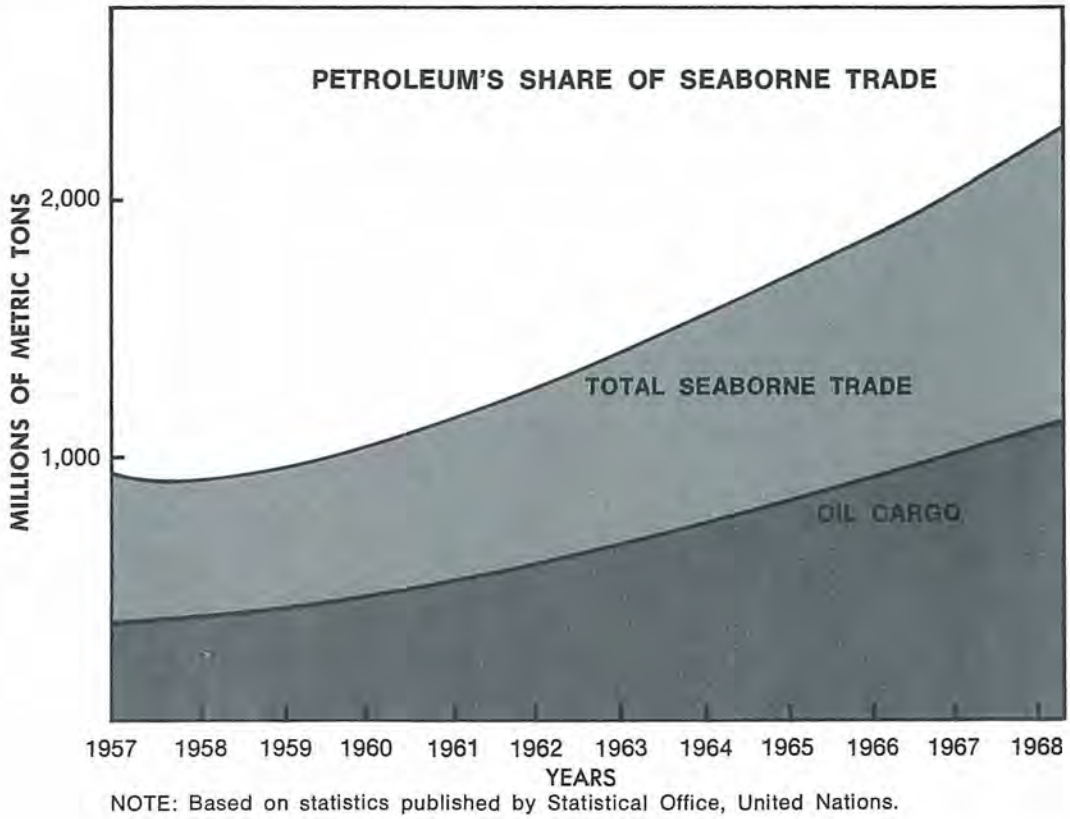
* The specific environmental concerns described in Part Two are those selected for comment in this Interim Report because they are considered to be most crucial at this time. These concerns will be dealt with in depth, along with many others, in the final report.

# I. OIL SPILLS IN WATER OPERATIONS

## OCEAN, COASTAL, AND INLAND TRANSPORT OPERATIONS

*1. The petroleum industry has taken positive steps for many years to increase safety and minimize accidents in order to avoid oil spills. Although significant progress has been achieved, even more advanced and more widely used standards and practices are needed for the prevention and control of oil spills occurring as a result of petroleum marine transportation and transfer operations--whether upon the high seas, or upon U.S. coastal and inland waters.*

Over half of the commerce on the high seas is represented by movements of petroleum (see Figure 2). Since there is today no other way to transport this commodity in bulk from overseas, marine transportation is the lifeline of the world's petroleum industry.



NOTE: Based on statistics published by Statistical Office, United Nations.

Figure 2.

Oil on the ocean and coastal waters remains a major problem--one that is international in scope and encompasses all classes of ships, as well as other operations, much of which is outside the petroleum industry's control. While tankers present the potential for large-scale spills, studies indicate that non-tankers actually may be contributing to sea pollution to a greater extent than tankers through routine operational discharges which are frequently within the law. Generally, good laws and regulations strictly enforced result in good preventative practices and minimum pollution.

Ocean Transport Operations

Oil pollution from vessels at sea can occur (1) through improper operation, including pumping of oily bilges, discharge of oily ballast from cargo vessels, and disposal of oily tank washings or ballast from tankers; and (2) through those mishaps that result in the release of oil.

Research and development, sponsored by the U.S. petroleum industry, is continually directed toward prevention of occurrence of oil spills by improving equipment reliability and pollution-control techniques, even beyond the standards of national statutes or international law. From this industry effort have come "load-on-top" techniques* for transport tankers, development of on-board oily water separators, improved loading and unloading procedures, and the building of more and larger shore ballast handling facilities in order to reduce even further discharges anywhere at sea.

The number of tankers lost in 1969 was reduced by about 25 percent from the average of such losses recorded in the previous three years. While this short-term trend is encouraging, the industry is seeking marked further improvement through several programs. Research projects are underway to improve navigation systems and to develop steering devices which will increase the maneuverability of ships so as to prevent collisions. Ship designers are investigating a variety of new features, including double-skin hulls, to minimize the seriousness of accidents. In addition, individual companies are increasingly emphasizing the training of ships' personnel, both at company schools and aboard ship, to improve navigation and general operating techniques.

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* Oil-water mixtures resulting from tanker compartment cleaning or from use of compartments to carry ballast are retained on board to commingle with compatible new cargo loaded "on top."

Internationally, the industry has strongly supported the efforts of the United Nations Intergovernmental Maritime Consultative Organization (IMCO) in improving international standards of vessel design and operation to prevent pollution, and in developing international agreements prohibiting discharges of oil at sea. Even though international law allows some oil discharge 100 miles or more from shore, most oil companies are now attempting to achieve a strict policy against discharge of oil or oily ballast anywhere in the world's oceans.

While the industry is working hard on all aspects of prevention of oil spills, it also recognizes that with 3,450 tankers and 44,400 other ships plying the world's oceans, some accidents may still happen. The industry has therefore taken steps to be sure that means are available to handle the costs of cleanup of oil spills and to persons sustaining pollution damage. For example, a voluntary plan has been instituted for handling the costs of cleaning up oil discharges from tankers operating in any part of the world's oceans.

Known as TOVALOP (Tanker Owners Voluntary Agreement Concerning Liability for Oil Pollution), the plan was put into effect in 1969 by seven international oil companies and is available to all tanker owners who wish to become participants. To date, over 80 percent of the world's tanker tonnage, exclusive of government-owned vessels, is now covered by TOVALOP. TOVALOP provides for reimbursement by participating ship owners to national governments at the rate of $100 per gross ton of tanker capacity up to $10 million, for expenses reasonably incurred by them to prevent or clean up pollution of coastlines as a result of the negligent discharge of oil from a participating tanker.

The International Convention for Prevention of Pollution by Oil (1954), revised in 1962, prohibits the discharge of oil in certain zones of the ocean. In 1969, the IMCO Assembly, meeting in Brussels, prepared and referred to States for ratification the following treaties:

1. The International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties;

2. The International Convention on Civil Liability for Oil Pollution Damage.

The former would authorize party States to take measures on the high seas to protect their coastline or related interests. The latter would apply to damage caused on the territory of a Contracting State and is applicable to the ship owner. Both of these draft conventions have been signed by the United States and the President has recommended ratification.

Coastal and Inland Waterway Operations

Although individual tanker mishaps can and have resulted in dramatically large oil spills, it should be noted that most of the aggregate amount of oil spills involves individual losses of small size. These latter occur primarily as a result of transfer operations and other routine operations of all types of ships.

In addition to extensive coastal waters of the United States, there are some 25,000 miles of navigable inland waterways in the United States. Barge movements on these waterways as well as in coastal waters represent an important part of the Nation's petroleum traffic. The industry actively supports increased attention to harbor cooperatives, to cleanup of oil spills and to broader arrangements with concerned local and federal groups for such purposes as providing waste disposal facilities and minimizing the effects of oil spills in coastal and inland waterways.

*2. The National Petroleum Council endorses governmental efforts to improve coordination and transportation support services so as to minimize mishaps and damage from oil spills.*

The emphasis of the Water Quality Improvement Act of 1970 on creation of an improved National Contingency Plan is a step forward.

Improved weather forecasting, ship lanes, and navigational aids would provide additional means of preventing massive spills. Better controls and international standards are needed in all forms of shipping. Likewise, advanced cleanup techniques would improve the means of controlling spills.

The petroleum industry and its individual members have mounted a substantial effort and considerable research to improve ability for the prevention and control of oil spills. This effort is being coordinated closely with related governmental programs.

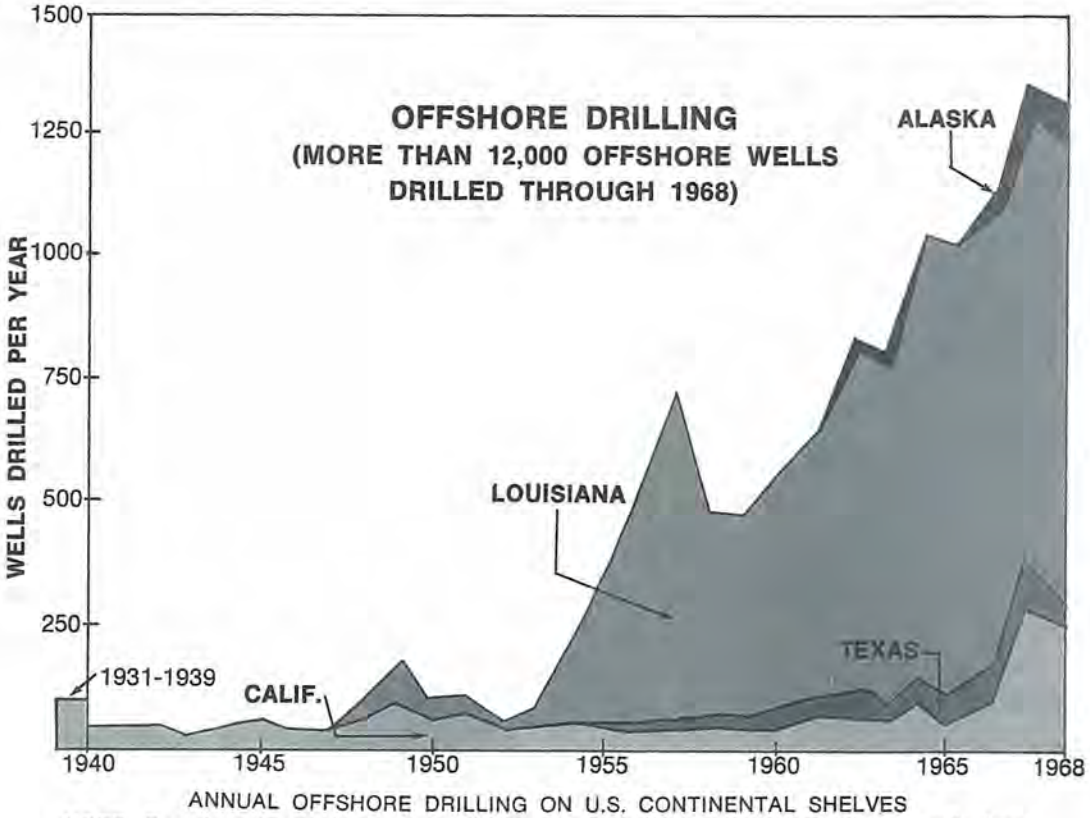
OFFSHORE PETROLEUM PROVINCES

*1. Environmental quality control of the offshore petroleum provinces of the United States, the prerogative of the Federal and concerned State governments, should be exercised effectively, yet in such a way as to permit the exploration and development of these essential domestic resources.*

The offshore petroleum provinces of the United States are and will be of major importance as a source of fuel to our economy in the years ahead. Production from these areas already accounts for some 14 percent of total U.S. domestic crude oil

and is expected to supply about 30 percent of domestic crude demand by 1980, providing exploration and development continue during the intervening years.

In the United States, the Federal and concerned State governments have promulgated regulatory systems designed to preserve the natural environment in these offshore areas and to prevent and control pollution that might result from uses of the subsoil, water column, and surface of the territorial seas and the continental margin adjacent to its coasts. The expanded experience of the petroleum industry during the last 25 years in exploring and producing hydrocarbons in extremely varied and diverse offshore submarine areas provides an extensive basis upon which first to evaluate and then reevaluate all regulations designed to assure that such offshore activities are conducted with minimum dangers to the surrounding natural environment and ecology. (See Figure 3.)




ANNUAL OFFSHORE DRILLING ON U.S. CONTINENTAL SHELVES

NOTE: Based on incomplete reports, it is estimated that over 13,000 offshore wells have been drilled through 1969; multiple completions are counted as one well.

Figure 3.

Oil-well blowouts, such as those which have occurred since January 1969, have increased national and industry concern and have stimulated even greater attention to all phases of offshore

operations. In this regard, it should be recognized that the petroleum industry inherently seeks, in its operations, to prevent losses of oil and gas as a matter of fundamental industry practice. These are valuable commodities, both to the nation and the industry. Their loss represents not only a financial loss to this industry, both as a commodity and a possible pollutant, but also a loss of valuable and necessary natural resources. Therefore, the industry is continually improving the technology for underwater exploration, drilling, and production to further decrease the small chance that an accident will happen.

*2. The National Petroleum Council believes that the United States must not pursue a policy precluding exploration and development of the potential petroleum reserves of the continental margins off its coasts.*

There is no rational basis for the adoption of such a policy, which some have labeled an "escrow" policy, because the finding and development of offshore petroleum reserves are and should remain compatible with the preservation of environmental quality in these areas.

The ratio of proved domestic petroleum reserves to the U.S. consumption of oil and gas is declining. Indeed, even taking into account the impressive discoveries on the North Slope of Alaska, the major promise of U.S. petroleum supplies for the future probably lies in the resources of the entire submerged portion of our continent extending from the coast of the United States down to the abyssal ocean floor.

*3. Exploration and data collection activities on the continental shelf present no significant pollution hazard and should be continued without interruption in order to determine promising areas for drilling.*

Prospects will thus be available when demands require their evaluation. It must be pointed out that even the best geological or geophysical data, and the interpretation thereof, never *prove* conclusively the occurrence or quantity of hydrocarbons. This has been demonstrated in a number of areas where the petroleum industry has paid large sums for acreage that turned out to be devoid of petroleum deposits, once drilled. Actual drilling after completion of preliminary exploration efforts is essential, therefore, to establish the occurrence of oil and gas.

*4. Undersea well completion technology is still in the early developmental stage and techniques are yet to be fully implemented. Therefore, it would not presently be feasible to require subsea completions as a matter of policy.*

Development of technology is moving forward in this area and the need for underwater completions will grow as petroleum production moves into deeper waters. Industry experiments involving submarines and other devices and technology being used for exploration, drilling, and producing have attracted some considerable attention. In the years ahead, they offer the ultimate promise of being able to operate an offshore oil field with no structures above the water's surface. Benefits include elimination of exposure to damage from storms and surface craft and improved aesthetics. At this time, however, experience with seafloor completions is limited and surface platforms may offer more safeguards for environmental control in many circumstances.

## II. USE OF PETROLEUM PRODUCTS

### SULFUR IN FUELS

*1. The amount of sulfur dioxide emitted from the use of heating oils in small installations represents only a relatively minor contribution to community air pollution problems.*

Since World War II, the already low sulfur content of the lighter liquid petroleum fuels--gasoline, diesel fuels, and home heating oils--has been further reduced by more than 50 percent. Despite dramatic increases in consumption of these petroleum products, the sulfur dioxide pollution attributable to their use is less today than it was over 20 years ago.

*2. Reduction in the allowable sulfur content below one percent for residual fuels, which are consumed mainly in large buildings, power plants, and other industrial facilities, will reduce further the availability of the combined amounts of fuels with one percent and lower sulfur content.*

As a result of local and state regulations, a market for residual fuels of one percent sulfur content, and sometimes lower, has been mandated in many areas. Market competition has made substantial volumes of one percent residual fuel available on the Eastern seaboard, where almost all residual fuel is imported.

There is little incentive, however, for domestic refiners to compete for any new market that might develop for residual fuel of sulfur content lower than one percent. Domestic output of residual fuels has been steadily declining in recent years because the expensive process required to desulfurize residuals is not justified by the relatively low market value of the resultant product. In fact, domestically, it is more economical to convert these stocks to higher valued products, such as gasoline.

*3. For large fuel users, such as utilities, removal of sulfur dioxide from stack gases appears to be a promising means of alleviating sulfur dioxide pollution problems in many areas in the relatively near future.*

The importance of careful consideration of the cost-benefit factor, as discussed earlier under "Economics of Environmental Conservation," is aptly illustrated in this case. The process of removal of sulfur dioxide from stack gases, although now expensive, would permit continued utilization of economic supplies of high-sulfur fuel oil and coal. Several stack-gas desulfurization pro-

cesses have been tested in full-scale demonstration plants with promising results. Utilization on a commercial scale, however, still appears to be a few years away.

MOTOR FUELS

*1. Under the free market competitive process, industry has succeeded in meeting federal standards for motor vehicle emissions and is capable of doing so in the future.*

If government limits its role to prescribing performance, as it now does, the record shows that individual manufacturers will compete to achieve that performance at minimum cost. If it proves technically impossible, or too expensive, to meet performance standards without a change in fuel composition, that fact will become apparent to the technical community.

Given sufficient time for planning and development, fuel manufacturers can be expected to compete to supply any new market that develops for modified fuels as a result of new engine specifications and requirements.

Air pollution from the gasoline engine is rapidly being reduced. Today's new cars emit less than one-third of the hydrocarbons and carbon monoxide emitted by the essentially uncontrolled models of the early 1960's, and the 1971 models are expected to control at least 85 percent of all hydrocarbon emissions. If lower engine compression ratios along with advance emission control devices become common, all harmful emissions will be substantially eliminated. However, to ensure that such devices in the hands of the general public will provide the expected degree of emission control, both initially and after the car ages, education and perhaps other measures may be needed to ensure use of proper fuel and periodic maintenance checks.

Industrial research into the ways and means of controlling pollution from motor vehicles has thus laid the foundation for past significant progress and can continue to do so in the future. Federal research expenditures, on the other hand, should not discourage or encroach on such private research or interfere with market competition between the various forms of energy. Governmental financing is appropriate for fundamental research studies, such as those designed to advance the frontiers of knowledge pertaining to the quality of the environment and to survey potential resources.

*2. The National Petroleum Council believes that, pursuant to existing legislation (Federal Clean Air Act, as amended in 1967), the petroleum industry is prepared to furnish requisite information to the Secretary of Health, Education and Welfare concerning the*

*composition and purpose in use of all fuel additives. However, any extension of governmental authority to require licensing or approval of fuel additives or fuel composition would, in fact, be detrimental.*

Such further extension of governmental authority would inject the government into the free market competitive process unnecessarily, thus limiting the initiative and capabilities of individual manufacturers to meet emission standards.

*3. Governmental involvement in the matter of motor fuel composition should be approached with the greatest caution. The effect of motor fuel composition on air pollution cannot be discussed meaningfully as an isolated proposition. The interrelationships between variables in vehicle design and fuel composition, as they affect emissions, are highly complex and to be treated effectively must be approached as a total system.*

The objective should be to achieve the optimum combination of all the variables to produce the greatest degree of pollution control per unit of additional cost. As previously discussed under "Law and Regulatory Policy," the intent of present antitrust laws and the possible needs for further legislation are especially relevent to this coordinated or "system" approach.

# III. GENERAL PERSPECTIVES

## A RANGE OF PROBLEMS

As noted in the Foreword, this Interim Report is not intended to deal with all the many environmental issues of concern to the oil and natural gas industries. Its purpose is to call attention to those issues considered most crucial at this time.

Problems such as the control of atmospheric emissions at refineries and control of the oil, oxygen demand, suspended solids, and other properties of refinery effluent waters are also receiving priority attention from the industry. Oil and gas producers are equally aware of the need to control saltwater pollution from oilfield operations. In fact, they have taken the lead over the past 30 years to develop operating solutions to this type of production problem and, where necessary, have sought appropriate legislation. The industry is also aware of the special problems posed by operations in Arctic areas and is seeking ways to solve them. For example, an extensive project on the fate and behavior of oil in the ocean is underway. In the field of marketing, steps are being taken to ensure that waste lubricating oils collected at service stations are disposed of without contributing to water pollution. There are also many aspects to the use of various fuels. These problems and other developments, nationally and internationally, will be dealt with more fully in the final NPC report on environmental conservation--the oil and gas industries.

## INTERRELATED SOLUTIONS

In the search for solutions to individual environmental problems, it is important to avoid examining them in isolation. In reality, many environmental problems are interrelated in such a way that an apparent solution to one may merely aggravate another. Improper solid-waste disposal, for example, can contribute to either air or water pollution, while sanitary landfill may destroy other valuable lands, such as wetlands.

Of more direct concern to the petroleum industry is the way that the expansion of urban and suburban transportation requirements has helped to focus increased attention on air pollution. Many highways and city streets are not now designed to handle rush-hour automobile traffic, thus restricting use of the private automobile by people who have a need to use this form of transportation. For these and other similarly related problems, no one segment of society can accept full blame; all of us are guilty.

There is no doubt that the petroleum industry, in accepting its share of the responsibility for these complex problems, will support government at all levels in the development and execution of solutions through adequate public planning.

## APPENDIXES

A. STUDY REQUEST LETTER

B. MAIN COMMITTEE MEMBERSHIP

C. COORDINATING SUBCOMMITTEE MEMBERSHIP

APPENDIX A

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

COPY

April 15, 1969

Dear Mr. Abernathy:

One of the major national concerns today is the increasing pollution of our environment. Our increasing population, the growth of our cities and the expansion of our industry all create problems of air and water pollution. We feel it would be extremely useful and timely if the oil industry could present comments on the proper role of the industry in formulating or cooperating in corrective actions. A study and report by the National Petroleum Council would give the industry an opportunity to present proposals for the prevention or alleviation of pollution and would also serve as an indication of the willingness of the petroleum industry to cooperate with Governmental efforts in pollution abatement.

We, therefore, request that the National Petroleum Council undertake a study of air and water pollution by petroleum facilities and fuels and the impact of pollution control efforts on industry operations. We suggest that the study cover current pollution problems in the petroleum industry, measures for prevention of pollution in the petroleum industry, measures for counteracting accidents resulting in pollution of water by oil and the impact of pollution control regulations on the supply and cost of petroleum products and natural gas.

We are particularly interested in a study of the major disasters such as those which have resulted from tanker accidents and offshore well blowouts. We feel that the U.S. oil industry should be a leader in efforts to avoid or minimize these disasters since it plays such a predominant role in the operation of the facilities involved. This portion of the study should cover the frequency and causes of past accidents and the probability of future occurrences, the trends towards the use of larger facilities and the expected results of such trends, measures taken in the past to prevent or minimize such disasters, additional preventive and precautionary measures which might be taken, current research and suggested ideas for additional research for prevention and cleanup of pollution.

The study should also cover other sources of pollution in the petroleum industry. Specific areas are pollution from salt water flooding, waste oils, and storage and pipeline operations.

We also suggest that the study specifically cover the impact of environmental control regulations on the availability and cost of petroleum products and natural gas. This part of the study should include a careful analysis of regulations on raw material development, environmental controls and direct specifications on product properties.

In summary, we believe that this study should reflect efforts to assure that all pertinent facts are placed before the Government officials who are charged with the making of policy decisions involving pollution control regulations which may affect oil and gas operations.

Sincerely yours,

/S/ HOLLIS M. DOLE

Assistant Secretary of the Interior

Mr. Jack H. Abernathy
Chairman
National Petroleum Council
1625 K Street, N. W.
Washington, D. C. 20006

APPENDIX B

NATIONAL PETROLEUM COUNCIL
COMMITTEE ON ENVIRONMENTAL CONSERVATION-
THE OIL AND GAS INDUSTRIES

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Association

SECRETARY

Vincent M. Brown
Executive Director
National Petroleum Council

APPENDIX C

# COORDINATING SUBCOMMITTEE OF THE NATIONAL PETROLEUM COUNCIL COMMITTEE ON ENVIRONMENTAL CONSERVATION- THE OIL AND GAS INDUSTRIES

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