Analysis of the Feasibility of Separating Exploration From Production of Oil and Gas on the Outer Continental Shelf

May 1975

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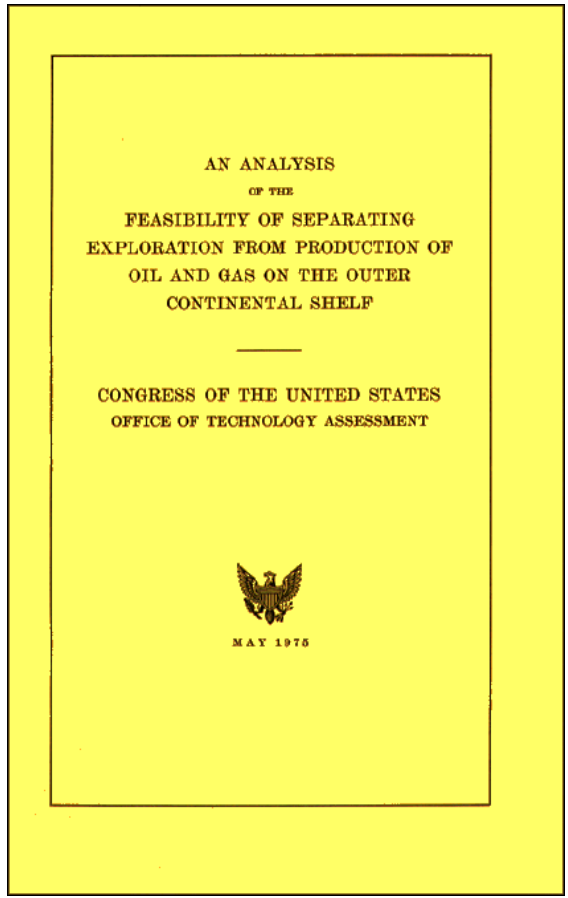

LETTER OF TRANSMITTAL

MAY 8,1975.

HON. WARREN G. MAGNUSON,
Chairman, Committee on Commerce,
US. Senate,
Washington, D.C.

HON. HENRY M. JACKSON,
Chairman, Committee on Interior and Insular Affairs,
U.S. Senate,
Washington, D.C.

-v

GENTLEMEN: We are pleased to transmit the following report on an OTA analysis of the feasibility of separating exploration from production of oil and gas on the Outer Continental Shelf.

Prepared by the Office of Technology Assessment with the assistance of an ad hoc Task Force, this report indicates that it is feasible to accomplish separation of exploration from production and presents a selected set of alternative methods to accomplish separation. Advantages, disadvantages and uncertainties associated with each are identified and analyzed in the report.

The summary of findings contained herein is not intended to reflect the views of individual members of the Technology Assessment Board of OTA.

Respectfully yours,

OLIN E. TEAGUE,
Chairman of the Board,
Office of Technology Assessment.

CLIFFORD P. CASE,
Vice Chairman of the Board,
Office of Technology Assessment.

LETTER OF SUBMITTAL

MAY 8, 1975.

HON. OLIN E. TEAGUE,
Chairman of the Board, Office of Technology Assessment,
U.S. *Congress,*
Washington, D.C.

DEAR MR. CHAIRMAN: I am pleased to submit this report, entitled an "Analysis of the Feasibility of Separating Exploration from Production of Oil and Gas on the Outer Continental Shelf," which was jointly requested on January 23, 1975, by Senator Warren C. Magnuson, Chairman of the Committee on Commerce, and Senator Henry M. Jackson, Chairman of the Committee on Interior and Insular Affairs.

This report was prepared by the Office of Technology Assessment with the assistance of an ad hoc Task Force comprised of representatives of various elements of the oil exploration industry, Including geophysical survey operations, exploration program planning and exploration drilling, and non-industry representatives on public policy and economics. Those involved in this analysis displayed resourcefulness and dedication in completing the assigned task.

Examination of and reactions to this analysis last month during joint hearings of the Senate Committees on Commerce and Interior and Insular Affairs will prove useful to OTA's ongoing oceans assessment, scheduled for completion later this year.

Sincerely,

EMILIO Q. DADDARIO,
Director,
Office of Technology Assessment.

Enclosure.

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EMILIO Q. DADDARIO, *Director*
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Introduction

Bills now before the 94th Congress contain various provisions for amending the Outer Continental Shelf Lands Act of 1953. These provisions address the question of appropriate management of U.S. offshore resources, especially those involving petroleum and natural gas deposits which may exist on the Outer Continental Shelf (OCS).

How OCS resources should best be measured and managed is a question that ultimately impinges on many associated issues. It contains important implications with respect to national energy policy, resource control and management for both optimum production and impact moderation, and equitable return to both industry and public from production of the resources.

Present lease practice links exploration with development and production by successful bidder. A specific question arising out of both National and State concerns about OCS management, and being addressed by the Congress, is whether the national interest would be better served by separating OCS exploration from development and production, and, if so, by what means this would be best accomplished. At the request of the Committee on Commerce and the Committee on Interior and Insular Affairs of the U.S. Senate, the Office of Technology Assessment has analyzed the feasibility of separating exploration from production of oil and gas on the OCS and analyzed the consequences likely to occur. This report contains the results of that analysis.

The work was begun on February 20, 1975 and was completed by OTA with the assistance of an ad hoc Task Force. Participation of Task Force members should not be taken as an acceptance by them of the premise implicit in the report that separation of exploration from production and development is a more likely or appropriate means of achieving the policy objectives discussed than other means which have been considered elsewere. Moreover, while the draft report as a whole incorporates collectively the informed judgment brought to this effort, specific findings within it should not be construed as necessarily representing the views of any individual of the Task Force.

The Office of Technology Assessment is indebted to the members of this Task Force who came in to assist OTA in the preparation of this report. Task Force members included: Dr. Michael Devine of the University of Oklahoma; Dean B. Lewis of Natomas Company; John D. Moody, petroleum consultant; Jan Pedersen of the Offshore Company; Carl H. Savit of Western Geophysical Company; Dr. Robert D. Tollison of Texas A&M University; and Dr. Irvin L. (Jack) White of the University of Oklahoma. The OTA staff members were Thomas A. Cotton, Lionel S. Johns, Peter A. Johnson, Cynthia Mercing, Robert W. Niblock and Charles W. Wixom.

OTA also appreciates the advice received during the planning stage from Dr. Hollis D. Hedberg of Princeton University.

Definition of Terms

Terms frequently used in this report are defined below. These definitions are limited to elements of meaning necessary for this report and should not be construed to be complete technical definitions.

OCS.-The Outer Continental Shelf (OCS) is that portion of the land beneath the ocean off U.S. shores seaward of the three mile state jurisdictional limit, which for the majority of the coastal states is three nautical miles. OCS acreage of the U.S. totals some 560 million acres* of which 10 million have been leased.

Frontier Areas.—Frontier areas of the OCS are those which have not yet been explored and are generally considered suitable for leasing. A number of specific regions in the Atlantic, the Gulf of Mexico, the Pacific and around Alaska are identified as frontier areas. The principal ones are (see Figure II–2) :

Georges Bank (North Atlantic)
Baltimore Trough (Mid Atlantic)
South Atlantic
Gulf of Mexico (beyond all present discoveries)
Southern California Offshore
Washington and Oregon Offshore
Gulf of Alaska and Outer Cook Inlet
Bering Sea, Bristol Bay and Norton Sound (Alaska)
Chukchi Sea (Alaska)
Beaufort Sea (Alaska)

Oil *and Gas Reserves.*—Reserves of oil and gas in any field are those quantities which have been identified through drilling. sampling and calculating specific quantities. "Proved" reserves are those quantities in a field which can be recovered with reasonable certainty under existing economic and operating conditions. Only a portion (20-40%) of the total reserves in place can be recovered.

Trap and Field.—Oil and gas are found in commercial quantities because these hydrocarbons tend, by geologic recesses, to concentrate in particular rock formations overlong periods of time. Certain kinds of subterranean geologic features are known to have acted as "traps" for oil and/or gas, and such traps are commonly described by geologists as having the potential of containing hydrocarbons. The process of exploring or oil and gas is thus focused on finding traps where petroleum may have been collected. When a trap has been identified and subsequently, through exploratory drilling, found to contain commercially producible quantities of oil or gas, it is then designated a "field." A field is thus a trap in which commercial amounts of oil or gas have been discovered.

Structural and Stratigraphic Traps.—There are two principal geologic descriptions of traps which typically contain commercial quanti-

* U. S. Department of the Interior, "Outer Continental Shelf Statistics . . . 1953 through 1972," p. 1'5.

tities of petroleum: structural traps and stratigraphic traps. These terms describe the rock layer formation that surround a given trap. A structural trap is one typified by a particular conformation of the natural layering characteristic of sedimentary rocks. A stratigraphic trap is one typified by alterations in the composition of the natural layering .

Block- It is common for a large trap to be divided by vertical shiftings of formations known as "faults." Each section of a major trap so separated is known as a block (or sometimes "fault-block?'). An individual block can thus be considered a smaller sub-trap which is part of but not connected with the rest of the main trap.

Exploration.— Simply defined, exploration involves two major steps: **geophysical surveys** and exploratory drilling. More broadly, exploration for oil and as is the entire process of broad and specific surveys and collection of indicative data on an area followed by detailed geophysical delineation of geologic features and by drilling of holes into potentially productive traps. Exploration is completed if oil or gas is found. Additional exploration work—the drilling of more holes- may be done after a discovery to further delineate a field. Exploration involves a high economic risk, since there is the high probability that no discoveries will be made, particularly in frontier areas. In the offshore oil industry, even after detailed surveys are conducted, only one drill hole in ten can be expected, on the average, to show a commercial discovery, and there are wide but unpredictable variations, in particular cases, from the average.

Geophysical Surveys.—Geop hysical exploration is an indirect method of mapping subbottom geol ogical forms and features to show submerged structures and interfaces. The principal method used is the seismic (or acoustic) survey, a technique of producing precise sounds (of discrete frequencies and intensities) which are variously reflected and refracted from underground layers and then measured at the surface. The measurement of natural gravity and magnetic fields also helps define the geology of an area. Having become a major component in oil exploration, the seismic survey is typically employed extensively in any offshore area prior to drilling. Seismic techniques have become much more sophisticated in recent years and are used both to identify good **poteential traps and to locate the most** promising site for drilling an exploratory hole.

Seismic Line Mile.—Seismic surveys are normally conducted from a ship equipped with geophysical data-gathering instrumentation. The ship proceeds along pre-determined lines following a grid on the surface above a given area. Many miles of closely-spaced crossing lines are necessary to survey a major area. A seismic line mile is a typical unit of measure of these survey lines.

Core Drilling.—Drilling, sometimes called stratigraphic drilling, is done to obtain samples of sedimentary rock. These rock samples provide a valuable means of interpreting geophysical data, primarily those obtained by seismic techniques. Until such samples of the rock have been obtained, the exact speed at which sound travels through individual layers is difficult, if not impossible to determine. (See Geophysical Surveys,) above.)

Exploratory Drilling.-Exploratory drilling is the second phase of an exploration program. In offshore areas it is accomplished by means

of some floating or "jack-up" type of mobile drilling rig, which can be moved from place to place to drill into traps located by geophysical methods. The primary purpose of exploratory drilling is to get a "yes" or "no" answer as to whether there is, in fact, oil or gas in a given trap. Coring and data logging techniques within the exploratory well may be necessary to make this determination and to provide certain additional geologic information. Data logging involves the lowering of a sensor (acoustic, gamma-ray, etc.) down a drill hole to obtain formation data.

Developmemt and Production.—Basically, development of an oil and gas field begins after discovery of accumulations in commercial quantities. It includes definition of the extent of potential reserves, production rate estimates, and construction and installation of facilities for production of the field, including the means to deliver the product to a loading point. Production of the oil or gas begins only after a reasonable estimate has been made of the approximate amount and potential flow rates of the oil or gas found and completion of the installation of necessary facilities and the drilling of producing wells. (Oil and gas can occur together in a field or separately. There is usually some gas associated with all oil fields, but there can be significant occurrences of gas with little or no oil.)

Tract.—A compact area of up to 5,760 acres (3 miles square), defined in the OCS Lands Act of 1953 as the maximum unit of area offered in each lease sale issued pursuant to the Act.

Unitized Exploration or Production.-In situations where a trap may underlie multiple tracts, the lease-holders agree that a single one of them (thus "unitized") will make the exploration and/or development effort, with all sharing the costs (and possible returns) on a pro rata basis.

Chapter I—Summary of Findings

A. Introduction

The executive branch of the Federal government plans to expand extensively the leasing of offshore tracts for petroleum and natural gas exploration, development and production. The Department of the Interior proposes to follow existing procedures for such leasing. Two key characteristics set the proposed lease plans apart from previous practice: the areas involved are far larger than any previous lease sale, and many are in frontier locations which are adjacent to states which have not had previous experience with petroleum production.

Recent national policy questions have been raised about possible conflicts between protection of reserves for future use and enhancement of near-term production to lessen dependence on petroleum imports. In addition, elected representatives of the several states potentially to be involved have raised questions about the adequacy of present Department of the Interior policies to provide timely information with which the states can plan steps to minimize adverse economic, social and environmental impacts which might be expected to accompany petroleum development and production. Finally, the Chairmen of the U.S. Senate Committee on Commerce and the Committee on Interior and Insular Affairs expressed a desire to know, in light of possible national energy needs, how changes in present policy would affect the nation's ability to obtain oil and gas from the OCS.

The principal concern about continuing present leasing policies is whether information is adequately available, before leases are issued and commitments to produce are fixed, to determine the extent of petroleum and gas resources in the committed area. More complete information about the extent and location of reserves than that typically available under present policies, which customarily is kept proprietary by the leasing company, would tend to:

1. Enable affected coastal states to plan for expected onshore impacts of OCS development;
2. Afford better estimates of total reserves essential to sound federal energy policy planning;
3. Ensure an equitable return to the owner of leased lands, the people of the United States.

Thus, the key question to which this report is addressed, is: What is the feasibility of separating exploration of such OCS areas from production ?

This study examines present practices and considers several alternative procedures by which exploration maybe carried out prior to leasing and examines the advantages, disadvantages and uncertainties of each. The alternatives include three ranges of exploration effort (as defined on page 19)—limited, intermediate, and full (which was not fully developed due to lack of resource information) -by either gov-

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ernment exploration teams or contracting industry teams through licensing procedures. The study keys on three of the 12 "frontier" OCS areas as representative: the Mid-Atlantic (Baltimore Canyon), Gulf of Alaska, and Southern California.

B. Information Requested

In the request from the Committees on Commerce and Interior and Insular Affairs, Senators Magnuson and Jackson asked that "OTA undertake a specific analysis of the feasibility of separating exploration of the OCS frontier areas in the Atlantic, Pacific and Gulf of Alaska from development and production." The request specified that "feasible alternatives including exploration by private industry on its own initiative and exploration by private industry under government contract" be considered. The Committees are "particularly interested in whether any changes will speed up, slow down or otherwise affect our nation's ability to obtain oil and gas from the OCS assuming such supply is necessary to meet national energy needs."

In analyzing the preceding questions, OTA was asked to consider such factors as costs, impacts, management requirements, and whether a pilot project or full scale project might be indicated.

C. Preliminary Findings

OTA established a framework for comparing the advantages and disadvantages of a range of feasible methods. The derivation and analysis of the alternatives are contained in the following chapters. This summary presents the major findings of the analysis.

1. Feasibility" OF SEPARATION OF EXPLORATION FROM PRODUCTION

It appears feasible to separate exploration from production for the major prospects identified in the frontier areas in a limited or intermediate exploration program as defined in the report. However, since full exploration would require information obtained in the process of development and production of a region, it is probably not feasible or practical to conduct full exploration prior to production. Furthermore, OTA found that an intermediate program would merely be an extension of a limited program. Consequently, if separate exploration was desired, it could be initiated on a limited basis with the decision to extend to an intermediate level deferred.

The analysis also found that, as certain benefits accrue from such a separation, lt is likely that there will also be certain disadvantages or uncertainties of success, time loss and other impacts accruing from separation. These should be considered by policymakers in their deliberations. It should be noted further that there are possible alternatives to separation which could resolve, in part, the issues which raise the question of whether exploration should be separated from production.

2. PILOT PROJECT

The task group finds that under a limited or intermediate program, the time to conduct exploration would range from 5 to 8 years. Thus it is likely that a moratorium in other frontier areas, during the time a pilot program is conducted, would introduce intolerable delays in obtaining resource information, and petroleum, from those areas for

national energy planning and energy needs. A pilot project in one area could be performed concurrent with conventional leasing in other areas, and thus would become more a yardstick to gauge industry programs rather than a pilot project. Such a project may create competition between industry and government for such equipment as mobile rigs, tubular goods and other equipment, which are in limited supply.

3. PROGRAM COST

A limited exploration program, covering major prospects in one OCS region and extending &6 years, was broadly estimated to cost between $0.6 billion and $1.6 billion de ending on the region, environmental factors, drilling depth and other variables. An intermediate program extending about eight years would cost between $1.3 and $2.4 billion. (The report describes how these costs were estimated. Reasonable lead times for equipment availability are included.) We have further calculated that exploration cost per barrel of oil discovered, based on the most optimistic discovery assumptions, would range from $0.14 to $0.50 per barrel. These figures, of course, exclude acquisition of leases and perhaps other costs associated with industry "finding costs."

However, it should be recognized that at present bonus bids are discounted by bidders to reflect their estimates of exploration costs. While the magnitude of such reduction of bids is unknown, the effect of the discount is to reduce the value received by the government. The result is that, under the present system, the government is in effect already making an indirect payment for exploration.

4. PROGRAM MANAGEMENT

The various proposed alternative exploration programs could be managed by an expansion of the present Department of the Interior agencies concerned with this subject, i.e., the Bureau of Land Management and the Geological Survey. We have indicated within this report the management and technical staff that would be needed for each program.

In executing a limited industry program, in which the responsibility of managing the exploration program remains with industry, a minimum of new government staff would be required. However, for a government-managed program, it is anticipated that a staff of over 115 personnel of specialized experience including exploration management would be required in each frontier area to direct the program.

5. COMPARISON OF ALTERNATIVES *

OTA found that of the alternatives investigated, each successive one could be viewed as requiring an increased level of Federal participation in resource management and control. These range from present practices, to an incentive system of industry exploration, to a system of government contracting for exploration of successively increasing portions of the resource potential.

*** (See Chapter IV for a detailed comparison.)**

In this ascending order of control, the need for government to exercise resource management increases from establishment of resource size and value to metering the rate and time of using the resources.

However, with each increase in level of exploration control by government, the uncertainty of success rises because increasing control implies increasing reliance on relatively inexperienced government management to design and carry out the required programs. Government management capability is handicapped relative to industry's in that the latter can rely on the incentives of higher compensation and/or profit sharing to attract, retain and motivate highly competent personnel.

The uncertainties regarding time cost and degree of success rise as the dependency shifts from industry to government due to the lack of government experience in exploration, the need for new management personnel, use of less flexible government procurement practices, and the necessary increase in the number of contracting and leasing steps to reach production.

The comparison of the existing system with alternatives of limited industry exploration and limited government exploration is illustrated in Table I-1 in the context of the issues associated with separation of exploration from development.

The policy makers are consequently left with decisions as to how to balance the desired level of resource management with the degree of risk or uncertainty which can be tolerated in achieving that level.

6. OTHER FEASIBLE MODIFICATIONS OF PRESENT METHODS

During the evaluation of separation of exploration and production as a means of resolving the issues identified in Chapter II, it was evident that there were numerous changes other than separation which would serve to help resolve the issues. It was not possible in the course of this analysis to review all of the possible modifications as they relate to each issue. In addition, as in the case of separation, as certainty is increased in the resolution of one issue, it causes a reduction of risk in the resolution of a second or third. This study did not attempt to seek an optimum combination of modifications to present practice to satisfy all issues. Rather, in the evaluation section, Chapter IV, we have attempted to identify modifications possible as they relate to each issue. An evaluation far more extensive than was possible here would be required to examine all of the possible modifications and their inter-relationships.

Table I–1.-Comparison of the existing system with two alternatives for separating exploration from production

Issues	No separation-existing system [1]	Separation alternatives	
		Limited industry exploration	Limited Government exploration
1. Public availability of resource information:	Minimum availability.	More extensive availability.	Maximum availability.
2. Public control of resource development:	Minimum control; rapid development.	More control with rapid development.	Slower development; full control.
3. Return to public:	Maximum uncertainty.	Less uncertainty.	Minimum uncertainty.
4. Efficiency of exploration:	Least time and best probability of success.	More time; success requires proper incentives.	Maximum time; least probability of success.

[1] For each issue, specific changes could be made to the existing system without separating exploration from production to provide improvement over the existing system.

A. Role of the OCS in the Future US. Energy Supply.

In 1973, the United States consumed petroleum liquids at a rate of 17.3 million barrels per day (or 6.3 billion barrels per year). Of this amount, 11.1 million barrels per day were produced from U.S. sources and 6.2 million barrels (35.9%) per day were imported.[1] At the 1973 rate of consumption, and without imports, it is estimated that '7.4 -years' supply of discovered oil and gas remain in U.S. territories.[2] Considering the varying reliability of foreign sources of supply along with the potential for severe economic and social disruption which could result from any severe shortage of energy supplies, the unknown quantities to be found on the OCS assume major importance.

Present production of crude petroleum from the OCS is 0.9-1.0 million barrels per day, or about 10% of the total production from U.S. reserves.[3] Offshore Louisiana provides about 95% of all U.S. offshore production from the OCS. A corresponding quantity of gas (about 9 billion cubic feet per day is also produced on the OCS, representing about 15% of the total U.S, production. Several recent studies estimate that a substantial proportion (about one-third) of U.S. oil resources available for the future are most likely to be discovered in the OCS regions.[4]

It is important to note there are no proven reserves in the OCS frontier areas under consideration; no drilling has been done. However, initial estimates of resources expected to be discovered have been made by the U.S. Geological Survey (USGS) based on broad geological and geophysical data which have been collected and analyzed. This information is more reliable in some areas than others, but it is quite subjective until some reasonable exploration effort, including drilling, has been accomplished. The following table presents these USGS estimates of resource potential for the major OCS regions.[5]

OCS Frontier Area	Estimated oil (billion barrels)	Estimated as (trillion cubic feet)
Atlantic (North, Mid and South)	8 to 16	50 to 100.
Gulf of Mexico (areas not explored to date)	18 to 36	150 to 300.
Pacific—California, Oregon, Washington (areas not explored to date)	4 to 8	5 to 10.
Alaska (all basins)	28 to 56	150 to 300.
Total	58 to 116	355 to 710.

1 Federal Energy Administration, "Project Independence Task Force Report—Oil : Possible Levels of Future Production." November 1974, P. II–9.

25 Attachment F, "An Analysis of Oil and Gas on the Outer Continental Shelf. " Section H. contains further discussion of resource needs and depletion.

3 Derived from U.S. Department of the Interior Bureau of Mines, "Petroleum Statement, Monthly," November, 1974. Table 3a. p. 7.

4 Attachment F, Section II. See especially p. 9.

s U.S. Department of the Interior Geolocal Survey, "USGS Releases Revised U.S. Oil and Gas Resource Estimates," (news release) March 26, 1974.

To put these estimates in perspective, the possible output from key areas at peak production has also been estimated. In the Mid-Atlantic region, for example, such production could be as much as 740,00 barrels of oil per day (or about 7% of this nation's total 1973 oil production) and 4.4 billion cubic feet of as per day (some 8% of present total U.S. gas production). In the Gulf of Alaska, estimates suggest the possibility of producing 1.5 million barrels of oil per day and 6 billion cubic feet of gas per day.

B. Current and Proposed OCS Leasing

Oil and gas exploration and production on the OCS was initiated soon after passage of the OCS Lands Act of 1953. Regions defined as the OCS are those portions of offshore lands beyond the three mile limit for the majority of coastal states. While by far most OCS leasing and production from 1954 to the present has been in the Gulf of Mexico, some leasing and production has been accomplished off California. Leases also have been let on the OCS off Florida, Mississippi, Alabama, Washington and Oregon.

Present Department of the Interior lease practices and management of the OCS are detailed in Attachment A, OCS Lands Act of 1953 . . . " and Attachment B, "Department of the Interior OCS Orders 1–12." The following is a brief summary of present practices and procedures,

The Department% Bureau of Land Management specifies areas for intended lease based on both industry and government estimates of potential reserves and other factors. (See Appendix 1, "OCS Leasing Procedures. . . ") This is followed by an accelerated collection and analysis of geophysical data from the specified region by both the U.S. Geological Survey and private companies to determine the best prospects for drilling and the amounts of reserves expected. Simultaneously, baseline environmental and geophysical studies are conducted to provide some degree of detection of possible adverse effects.

A request for nominations of specific tracts of interest is then published in the Federal Register. Publication also provides an opportunity for interested parties to comment on why specific tracts in an area should or should not be leased.

A draft environmental impact statement (DEIS) is prepared by the Bureau of Land Management (BLM) and submitted to the Council on Environmental Quality (CEQ) for publication. A public hearing on the DEIS is held 30 days after publication b CEQ, and a final environmental impact statement is prepared and submitted by BLM to CEQ. During this process USGS refines its estimates of the value of the resources.

The decision on whether a lease sale will be held, and if so, which tracts are to be offered and on what terms, is made by the Secretary of the Interior. Typically, leases are sold for a cash bonus plus 16 2/3% royalty. The Department estimates values of each tract offered, and industry cash bids must equal or exceed this estimate.

Under present lease practices, sales of leases are made before the existence of recoverable reserves, if any, is proved. No exploratory drilling-tile only method which can determine the actual existence

of the resource-is possible under these practices.[o] The estimates of reserves have been made solely by geological and geophysical means, which include seismic soundings, studies of gross geological features, and research on magnetic and gravitational field variations. While these estimates incorporate the soundest of professional judgments, they can and often do vary widely.

The Department of the Interior has planned to accelerate leasing of OCS frontier areas over the next four years and is now proceeding with that plan. The stated goal is to lease over a four year period all the remaining OCS areas considered to have significant oil or gas potential. Six lease salesperyear preplanned.

This proposed OCS planning schedule is shown in Figure II-1 on page 13, with an accompanying map (Figure II–2) of the OCS regions of interest for oil and gas.

The status of this leasing schedule, as of March 1975, is shown in Table II–1. It is evident that some time slippage has occurred. The Mid-.Atlantic region leasing was delayed pending a supreme Court decision, rendered March 18, 1975, which held that the Federal government, not the individual states, holds jurisdiction over the contested OCS areas.

During 1975, plans call for five areas to be actually leased. Two of these are in the Gulf of Mexico; the others are off Southern California, in the Gulf of Alaska, and in the Mid-Atlantic.

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o Exploratory drilling cannot determine precisely the extent of the resource, however. The drilling of a few exploratory wells serves rather to refine the estimate.

FIGURE II-1

PROPOSED OCS PLANNING SCHEDULE

NOVEMBER 1974

SALE AREA		J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
South Texas	37																																										
Central Gulf	38	ND			T		DES	PH		FES	N	Sale																															
Southern California	35		T				DES	BSI	PH		FES	N	Sale																														
State-Federal Cook Inlet	1/					DES	PH		FES					Sale																													
Gulf of Alaska	39	BSI				C	ND	T			DES	PH				FES	N	Sale																									
Mid-Atlantic	40					C	ND	BSI	T			DES	PH				FES	N	Sale																								
MAFLA, Gulf of Mexico (Deep)	2/ 41					C	ND	T			DES	PH				FES				N	Sale																						
North Atlantic	42										C		ND	BSI	T			DES		PH		ES	N	Sale																			
South Atlantic	43											C		ND	BS	T			DES		PH			FES	N	Sale																	
Southern California	44													C		ND		T			DES		PH			FES	N	Sale															
Bering Sea (St. George)	2/ 45					C	ND	BSI	T			DES	PH				FES											N	Sale														
Gulf of Alaska Including Kodiak	46													BSI				C		ND		T			DES		PH		FES	N	Sale												
Gulf of Mexico (Deep)	47																		C		ND		T			DES		PH			FES	N	Sale										
So. California (Deep)	48																					C		ND		T			ES		PH			ES	N	Sale							
(Shallow & Dee																		S													DE												
Beaufort Sea								BS																		C		N		T			DI		PI								
Outer Bristol Basin								BS																			C		N		T			DE		PI			FE	N	Sale		
North Atlantic (Shallow & Deep)	52													BSI														C			ND		T			DES	PH			FES	N	Sale	
So. California (Deep)	53																														C		ND		T		DES		PH			FES	N	Sale
South Atlantic (Blake Plateau)	54														BSI																			C		ND	T			DES		PH		FES	N	Sale
Bering Sea (Norton Basin)	55														BSI																					C		ND	T			DES		PH		FES	N	Sale
Gulf of Alaska-Aleutian Shelf	56																							BSI													C		ND		T			DES		PH		FES	N	Sale
No. California, Wash., & Oregon	57																							BSI														C		ND		T			DES		PH		FES	N	Sale
Chukchi Sea (Hope Basin)	58																							BSI																C		ND		T			DES		PH		FES	N	Sale

BSI Baseline Studies Initiated
C Call for Nominations
ND Nominations Due
T Announcement of Tracts
DES Draft Environmental Statement
PH Public Hearing
FES Final Environmental Statement
N Notice of Sale

Baseline studies scheduled are contingent upon scientific personnel and equipment being available to perform the studies

The holding of sales in the Atlantic is dependent upon the outcome of pending litigation with the Atlantic States regarding jurisdiction over this area

Sales are contingent upon technology being available for exploration and development. A decision whether to hold any of the lease sales listed will not be made until completion of all necessary studies of the environmental impact and the holding of public hearings; as a result of the environmental, technical, and economic studies employed in the decision-making process, a decision, may, in fact, be made not to hold any sale on this schedule

1/ State may conduct sale

2/ These sales could be contingency sales for either Gulf of Alaska (39) or Mid-Atlantic (40)

Curt Berklund
Director
Bureau of Land Management

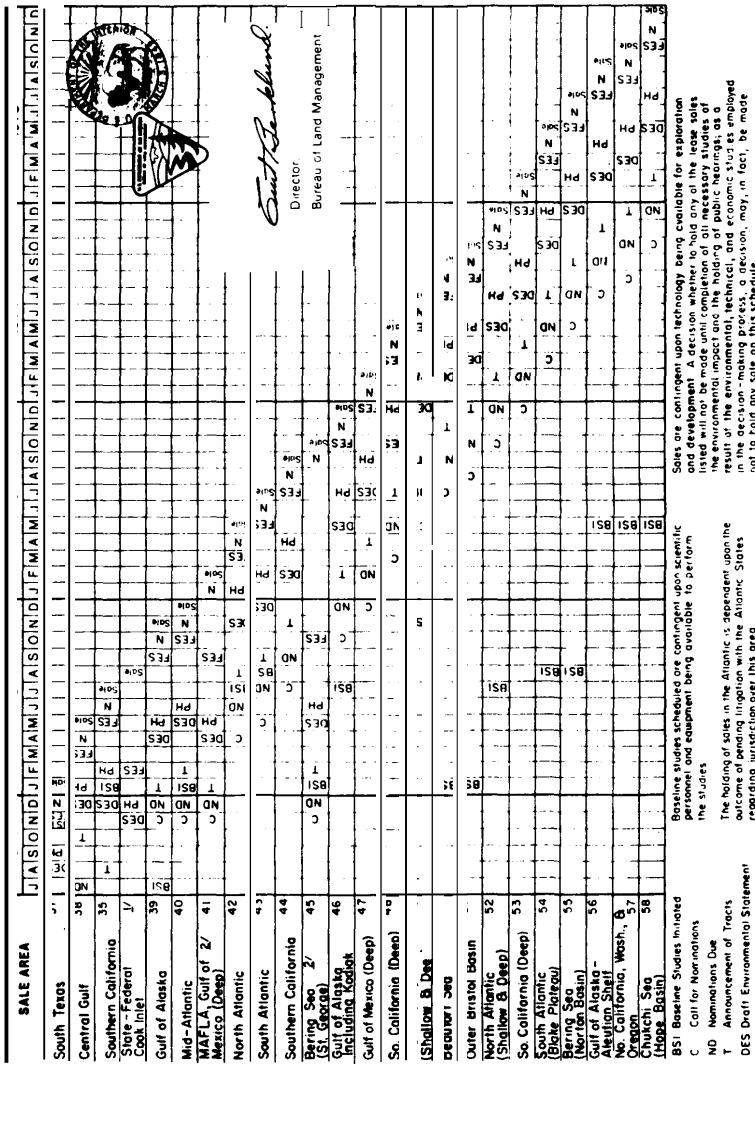


FIGURE II-2

OCS Regions of Interest for Oil/Gas Exploration

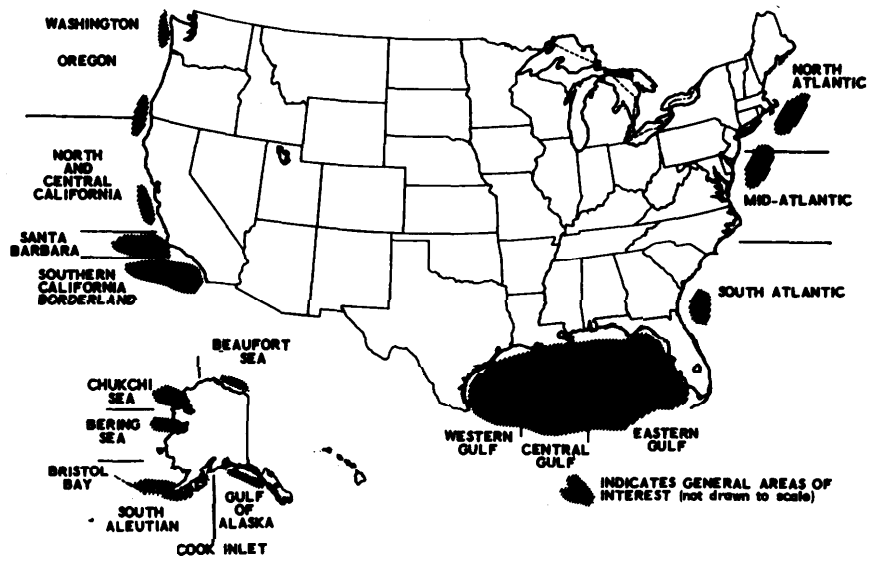


Table II-1.—Status of leasing schedule (as of March 5, 1975)

1. Central Gulf (sale No. 38) :	
Draft Environmental Impact Statement (EIS)	Dec. 20, 1974
Public hearing	Jan. 21, 1975
Final EIS	March 1975
Sale	May 1975
2. Southern California (sale No. 35) :	
Draft EIS	Feb. 21, 1975
Public hearing	April 1975
Final EIS	July 1975
Sale	Sept. 1975
3. Gulf of Alaska (sale No. 39) :	
Tract selection	March 1975
Draft EIS	April 1975
Public hearing	May 1975
Final EIS	Sept. 1975
Sale	Nov. 1975
4. Mid-Atlantic (sale No. 40) :	
Call for Nominations	Delayed pending Supreme Court decision.
Announcement of tracts	
Draft EIS	
Public hearing	
Sale	
5. MAFLA, Gulf of Mexico (deep) (sale No. 41) :	
Announcement of tracts	March 1975
Draft EIS	May 1975
Public hearing	June 1975
Final EIS	Oct. 1975
Sale	Dec. 1975
6. Bering Sea (sale No. 45) :	
Announcement of tracts	April 1975
Draft EIS	Sept. 1975
Public hearing	Nov. 1975
Final EIS	Feb. 1975
Sale	April 1976

C. Proposals for Change in the Present System

During 1973 and 1974, oil and gas shortages, along with the growing dependence of the United States on imported petroleum, focused attention on the possibilities of increasing domestic production. Man bills were introduced in the 93rd Congress for the purpose of amending the Outer Continental Shelf Lands Act in order to stimulate more exploration and production from offshore regions. Hearings were held during May 1974 before the Subcommittee on Minerals, Materials and Fuels of the Senate Committee on Interior and Insular Affairs. Seven bills were before this committee, which heard considerable testimony on them from various private and public sectors. Only one of the bills, the Energy Supply Act of 1974 (S. 3221) was passed by the Senate. (None was passed by the House.) A bill identical to S. 3221 was introduced (S. 521) in the 94th Congress along with numerous others relating to OCS oil and gas exploration and production. Referred to the Senate Committee on Interior and Insular Affairs, they raise questions about alternatives to the present leasing system, including specifically the separation of offshore exploration activities from development and production, which are addressed in this report.

At OTA's request, the Congressional Research Service has prepared a detailed analysis of some of these bills, and a comparison of two of them, for this report. These analyses and comparisons are contained in Attachments C, D, and E.[7]

No attempt has been made in this report to relate any of the exploration alternatives analyzed to specific provisions of the proposed legislation. Rather, the purpose of this study is to describe and assess the possible technical alternatives, in response to the joint request of the Senate Committees on Commerce and Interior, which specifically asked OTA to analyze the feasibility of separating exploration from development and production of oil and gas on the Outer Continental Shelf. (The requesting letters to OTA are in Attachment G.)

D. OCS Issues

1. PUBLIC A}".\ II. ABILITY OF RESOURCE INFORMATION

Knowledge of presently available and future supplies of depletable energy resources is fundamental to national energy planning policy, but there are varying opinions on how much quantifiable information is necessary and can, in fact, be obtained to facilitate this planning.

Estimates on such depletable resources as oil. gas and coal vary widely, as do projections of the time required to develop alternatives to these energy sources. Since petroleum and natural gas are the most widely used energy resources in the U.S., many believe that it is essential to know' much more precisely how much of these resources remain domestically. Their rationale is that it is not possible to frame a coherent policy relative to oil and gas imports, conservation of domestic supplies. and rate of development of alternate energy sources, in the face of major uncertainties about domestic oil and gas reserves. Many also believe that it is not possible to develop plans to minimize the adverse impacts associated with the extraction of oil and gas resources

[7] In addition, a comparison of bills amending the OCS Lands Act—S. 426, S. 521 and other bills—became available to the Task Force as this report was in final preparation and is included in Appendix 2.

unless the extent and nature of these resources are known prior to their production and development. And finally, many believe that it is not possible to assure that the public receives fair value on its OCS oil and gas resources unless the extent of these resources is known prior to their sale.

In each of the options presented and compared in this report, a primary consideration is their effectiveness in making more knowledge of the OCS resources publicly available prior to actual development and production of the resources.

2. PUBLIC CONTROL OF RESOURCE DEVELOPMENT

Under the present OCS leasing system, the company successfully bidding on an OCS lease tract has reasonable assurance that it can proceed from exploration to development and production without major interruption. While the developer must file, after discovery, a production plan for review and action by the Department of the Interior, this process traditionally has not resulted in unanticipated delays.

Concern has been expressed by representatives of many states adjacent to potential oil and gas resources in OCS frontier regions about the management of development that may occur in these new regions. Many argue that effective management of offshore and, in particular, onshore impacts is not possible under the present system. They note that the major impacts occur during development and production and contend that, under the present system, decisions affecting these are mainly controlled by the developer. Those who support the present system argue that the long lead time required to begin production from a successful tract allows ample opportunity to plan for impacts. They further contend that any new mechanisms that provide for more public control over development and production decisions could introduce prolonged delays. which in turn could impose unfair economic burdens on the developer and aggravate domestic oil and gas shortages. Those favoring greater public control over development contend that states, local governments. and others may take legal action, which could have the same or even greater delaying effects, if provision for such control is not made through changes in the present system.

The possibility of such delays introduces another element of uncertainty, which is considered in this report, into national energy planning and management.

Another argument advanced for greater public control over the development of oil and gas reserves in the frontier areas is that production of these reserves as rapidly as possible, which is encouraged by the present system, may not be in the long-term national interest. The basis for this concern is the great uncertainty about the amount of remaining undiscovered recoverable oil and gas reserves, a major fraction of which are assumed to lie in the OCS. If recent conservative estimates of these reserves are correct, then it may be desirable to produce these reserves at lower than the maximum efficient rate, and to accept a relatively high level of imports, in order to avoid a period of extremely heavy dependence on imports if domestic reserves are exhausted before alternatives sources (e.g., oil shale, coal synthetics) can be brought on line in sufficient quantities to replace them. On the other hand, if the

more optimistic estimates of remaining resources are correct, then development of domestic production as quickly as possible in order to reduce imports appears to be desirable, since there would still be ample time to develop acceptable alternative sources of hydrocarbons to replace the declines in production of natural resources when they ultimately occur.

The problem, according to proponents of greater public control, is that the current system commits OCS resources to rapid production be-fore adequate information about resource levels is available for determining the optimum rate of production, and without an adequate mechanism for regulating production at the desirable rate. Others argue that it is clear that OCS resources should be developed as quickly as possible, that whatever resources in fact exist in the OCS frontier areas can be brought to market most rapidly under the present system, and that stronger controls over development and production would simply cause additional delays in meeting short-term energy needs. This analysis considers the extent to which the alternatives under consideration will affect public control over the development of OCS resources, and the delays in production that any changes might produce.

3. RETURN TO THE PUBLIC

Since OCS oil and gas belong to the public, one important criterion for assessing any method for leasing these resources is the extent to which that method leads to an equitable division of the returns from development of those resources between the public and the developers. A basic feature of the current system is the fact that OCS lands are leased to private developers under conditions of great uncertainty about the amount of oil or gas they actually contain, since the existence of hydrocarbons can only be established by exploratory drilling which does not occur until after tracts have been leased. Proponents of exploration prior to leasing for production argue that it is unwise, perhaps even irresponsible, for the government to sell the rights to resources with great potential value without having a very clear idea of how much they are really worth. In this vein, some maintain that the relatively greater ability of the oil companies to estimate the true resource potential of OCS lands, compared to the ability of the Department of the Interior, makes it likely that the public has been receiving less than fair return for its resources. Others argue that competition in the bidding process insures that the public will receive a fair return, and some maintain that the public has received more than a fair return because of over-optimism about resource potential on the part of the winning bidders. This report considers the effects on the return to the public of a reduction of uncertainty about resource potential resulting from exploratory drilling prior to leasing for production, and, in particular. examines the effects on the relationship of bids to the true value of the resources being offered for sale.

4. EFFICIENCY OF EXPLORATION

Some geophysical exploration already has been conducted in OCS frontier areas, but there has been no exploratory drilling. An issue addressed in this report is whether greater efficiency of exploration can be achieved by changes in the present leasing system.

Efficiency is measured in terms of both time and financial costs, which often must be considered together. Some feel that any change in the existing system would introduce those delays they see as normally imposed by the operational preparations required to accommodate such change. And some contend that, owing to the extent of the area to be explored and the constraints of finite (or limited) supplies of equipment and competent personnel, variations in time and costs will be of marginal importance. They note that the risks of not finding resources at any given drilling site are substantial. Some say the efficiency of exploration would be increased if leasing were by traps-large areas-as opposed to the present practice of leasing tracts, relatively small areas (5,670 acres) which are geographically defined. Similarly, it has been suggested that leasing concentrate on the best potential target areas, overlooking marginal areas until later, on the presumption that this would make exploration more efficient.

There are also those who maintain that it would cost the government and public significantly more in time and money for it to undertake exploration programs, as opposed to industry exploration alternatives, because of the government's relative lack of appropriate management experience and professional personnel. Further, some hold that existing government planning and procurement requirements would impose delays if the present system is changed.

Each of the issues above is considered in the context of the various alternatives addressed in this report.

Chapter III.—Exploration Alternatives and Underlying Assumptions

A. Identification of Exploration Alternatives

This chapter identifies and describes several alternative methods for separating the decision to explore for oil and gas from the decision to produce any resources that might be found on the Outer Continental Shelves in frontier areas. These methods were chosen because they represent feasible alternatives for separating exploration and production. OTA recognizes that there are other systems which could modify present practices and provide resolution of the significant issues as well, but would not necessarily distinctly separate exploration from production. Modifications are not described in this chapter but certain modifications are suggested for consideration in Chapter IV.

The bonus bid leasing method presently used by the Department of the Interior permits both exploration and production, subject to the lessee meeting certain requirements, such as filing exploratory drilling and field development plans.

Using existing exploratory techniques, it is not possible to determine the presence of oil and gas until a hole is drilled, and it is not possible to determine the quantity of what has been discovered until a number of delineation holes have been drilled. Very little resource evaluation is possible prior to leasing under the present system since exploration is limited to non-drilling techniques.

The exploration alternatives to be described here provide for substantial exploratory drilling prior to leasing (or licensing) and for separate exploration and production decisions by government. These alternatives combine two variables: (1) the level of exploration effort, and (2) who is to conduct the exploration. Three levels of exploration effort-limited, intermediate, and full-and two variations on who conducts the exploration—government or industry-have been selected for analysis by OTA. This results in six exploration alternatives: limited government or industry, intermediate government or industry, and full government or industry.

A limited exploration program is intended to find and delineate the large traps in a given frontier area in an effort to discover major fields, those potentially capable of containing 500 million or more barrels of oil or gas (in equivalent barrels).[1] The second exploration level, intermediate, is intended to find and delineate both large traps (500 million barrel size or greater) and intermediate-sized traps potentially capable of containing over 50 million barrels of oil (or gas). Under a full exploration program, the objective would be to identify and delineate all traps in a given frontier area. As noted earlier,

[1] Wherever "oil" is used in this report it refers to either oil or gas, where quantities of oil are measured in barrels and gas is measured in "equivalent barrels" (i. e., the amount of gas equivalent in the amount of energy available to one barrel of oil).

each succeeding level is essentially an extension of the previous one, simply increasing the intensity of the exploratory effort m order to identify and delineate smaller traps. The exploratory methods and techniques would be essentially the same for all three levels of effort. In each case, the best or largest prospects would be explored first. Choosing a higher level of exploration effort would provide more detailed information about the quantity of resources within the frontier area being explored, but it would also take longer and increase the costs.

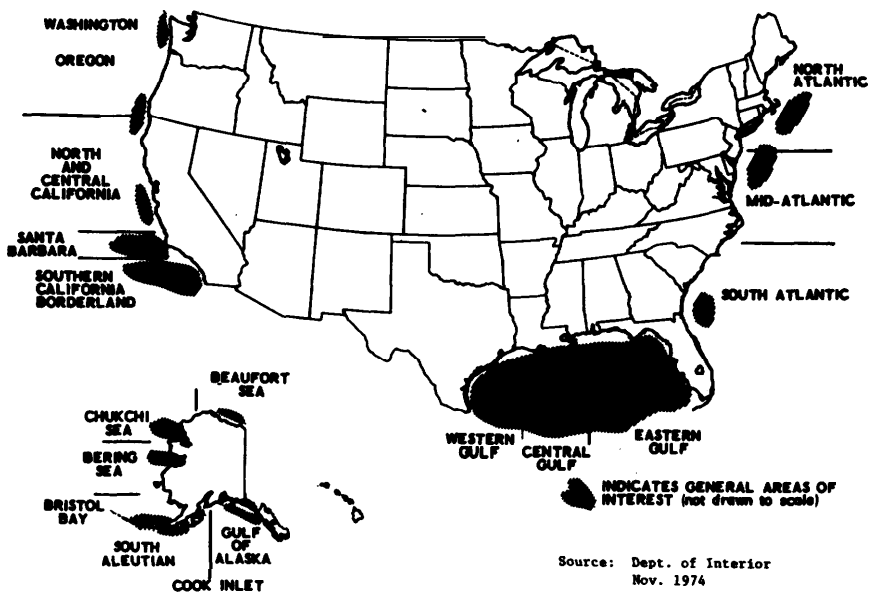
Who conducts the exploration is generally independent of which level of exploration is selected. In fact, all six alternatives (and even the present system) can provide for some degree of participation by both government and industry.

B. Identification of Representative OCS Frontier Areas:

The Department of the Interior has identified 15 OCS areas of interest for oil and gas exploration. (See map, Figure III–1) OTA selected for evaluation three of these as typical and representative of all the OCS frontier areas: (1) Mid-Atlantic; (2) Southern California; and (3) Gulf of Alaska. These three areas are at the top of Interior's priority list of frontier areas to be leased, and they are the regions of the greaest current interest from the viewpoint of coastal state impacts. The following descriptions of these areas have been abstracted from the Department of Interior, Envirormwntal *Impact Statement, "Proposed Increase in Acreage to be Offered for 0il and Gas Leasing on the Outer Continental Shelf.",* released October 18, 1974.

FIGURE III–1

OCS Regions of Interest for Oil/Gas Exploration



Mid-Atlantic

The principal geologic feature of the Mid-Atlantic OCS is the Baltimore Canyon Trough—so named for the defile cut into the subsurface continental slope offshore from Baltimore. The Trough is approximately 80 miles wide, underlies water depths of 60 to 6,000 feet, and extends from a point south of Long Island, New York, to Cape Hatteras over a distance of some 450 miles. The axis of the Trough is approximately 60 miles offshore and is generally at the 200-foot water depth.

In the deeper parts of the Trough, sedimentary rock (the normal host rock of oil and gas) may exceed 40,000 feet in thickness. Sea bottom stability is considered average, and there are no known geologic hazards.

As much as 16 million acres of the Baltimore Canyon Trough may be considered favorable for oil and gas exploration. Like other portions of the Atlantic OCS, the Baltimore Canyon Trough has not been tested, and its petroleum potential is unknown.

Southern California Offshore

The Southern California offshore area extends from Point Conception on the north to the Mexican border on the south, a distance of approximately 260 miles along the coast of Southern California, and reaches seaward about 150 miles.

The area contains several geologic features, the most familiar being the seaward extensions of the Los Angeles and Ventura Basins which are the sources of several prolific fields; e.g., Wilmington, Huntington Beach, Dos Cuadros, and Santa Ynez Unit. Other major prospective areas are the Santa Monica, and San Pedro Basins, the Santa Rosa-Cortes Ridge area, and the Tanner Bank located west of San Clemente Island. Total thickness of sediments ranges from 20,000 to 50,000 feet in the offshore Ventura Basin, but may be less in other southern California basins. Maximum thickness of reservoir rocks probably exceeds 2,000 feet.

Sediments equivalent in age to those producing in the Dos Cuadros field are present in the near-shore areas of Santa Monica Bay and San Pedro Bay, while portions of the seaward basin areas off the Santa Rosa-Cortes Ridge and Tanner Rank are thought to contain older rocks with possible petroleum potential.

Although faults are numerous throughout the area, they are not considered to be a significant hazard since rigs and platforms will not be located over recognized faults. Ocean floor slides could be a problem in these areas; however, old slide areas can be located and avoided.

* Wave conditions in the Santa Barbara Channel and in most southern California waters are relatively calm compared to the Gulf of Mexico.

Oil and gas have been produced for more than fifty years on State-controlled offshore lands in southern California, and by the end of 1973 total cumulative production exceeded 1.4 billion barrels of oil and 540 trillion cubic feet of *gas.* Cumulative production from the Federal (OCS) portion of the California Continental Shelf (all from the Dos Cuadros field) totaled 105 million barrels of oil and 50 billion cubic feet of gas as of December 1973.

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Gulf of Alaska

The Gulf of Alaska Basin includes an offshore area of about 50,000 square miles underlain by thick sediments and extending seaward from the shore to a distance of 50 to 100 miles. Water depths in the basin range from less than 60 feet to more than 6,000 feet.

Structures capable of trapping oil and gas have been identified in an area extending from east of Yakutat Bay to Kodiak Island, a distance of nearly 600 miles, and extending from about the shoreline to as far as 90 miles offshore.

Based on present knowledge, it is believed that the most promising structures in the Gulf of Alaska are located in less than 200 meters of water between Hinchinbrook Island and Yakutat Bay.

C. Underling Assumptions

1. POTENTIAL RESOURCES

Table III–1 presents approximate areas of interest in each of the three OCS frontier regions. It also summarizes estimates that OTA has made on the number of traps and the average drilling depth to be expected in each region. These estimates are the result of discussions among the OTA Task Force experts on this subject.

The potential reserves of each area listed in table III–1 are based on estimates given in the Department of Interior's Final Environmental Impact Statement for the proposed OCS lease sales.

For the percentages of the potential reserves that will be discovered by completing each exploration level of effort, the Task Force has assumed that each step-up in level of exploration will discover an increased portion of whatever potential there is. This assumption is based on an agreement among the Task Force that about 50% of reserves in the U.S. have. typically been found in major traps and 75% in major plus intermediate sized tram.

TABLE III-1.-DATA ASSUMPTIONS RELATED TO POTENTIAL RESOURCES OF REGIONS

	Frontier region		
	Mid-Atlantic	Southern California	Gulf of Alaska
Total area of interest:			
Square miles	25, 000	23, 000	50, 000
Acres (million)	16	15	30
Estimated:			
Number of major structural traps	7	13	13
Number of major stratigraphic traps	0	8	2
Number of intermediate traps	23	15	20
Average depth of well (feet)	16, 000	10, 000	10, 000
Potential reserves (undiscovered):			
Billion barrels oil	0–8	0–4	0–18
Trillion cu. ft.—gas	0–45	0–7	0–90
Percent discoveries assumed by exploration level: [1]			
Limited	50	50	50
Intermediate	75	75	75
Full	100	100	100

[1] Discoveries have been assumed to cover the total of oil and/or gas because no method is available to indicate the occurance of oil versus gas.

2. GEOPIIYSICAL AND DRILLIN G PROCEDURES

It is also necessary to make some basic assumptions about the procedures to be used to accomplish each level of exploration. Except for

time and cost estimates, these procedures are generally independent of who conducts the exploration. OTA Task Force members provided the background on typical practices and these were used to derive the data given in Table III-2.

Geophysical line mile estimates include reconnaissance plus the seismic detailing necessary prior to drilling any trap. It is estimated that reconnaissance requires 10,000 seismic line miles for each 5,000 square miles of area for limited exploration and double that amount for intermediate exploration. Detailing is estimated to require an additional 500 line miles per trap. Most of the limited reconnaissance seismic surveying is already completed for the Mid-Atlantic, some is completed for Southern California, and very little is completed in the Gulf of Alaska. Although most of the Mid-Atlantic data are now proprietary, it is assumed that government could purchase it rather than re-survey.

Table III-2 also presents the number of traps and the number of holes that would be drilled under each alternative program. In the case of both seismics and drilling, OTA did not consider it feasible to make reasonable estimates for a full exploration program. Until such time as exploration is started in a region, no estimates of smaller traps or total extent of potential areas can be made. A full exploration program may extend for 20 years or more in a region if substantial resources are discovered in the early years; the program could easily extend beyond 20 -years if a new technique is developed following no early discoveries. In any case, there are too many uncertainties to make feasible exploration estimates beyond the intermediate level of effort since the extent of a full program depends entirely on the results of a limited or intermediate program.

TABLE III-2.–SUMMARY OF ESTIMATED SEISMICS AND EXPLORATORY DRILLING REQUIRED

		Exploratory drilling			
	Seismic line (miles)	Number traps drilled	Number holes	Number rigs minimum/ maximum	Rig-years total
Mid-Atlantic:					
Limited [1]	4,000	7	100	3/10	25
Intermediate	62,000	30	263	3/15	66
Full	(2)	(2)	(2)	(2)	(2)
Southern California:					
Limited	60,000	21	238	3/15	40
Intermediate	118,000	36	347	3/15	58
Full	(2)	(2)	(2)	(2)	(2)
Gulf of Alaska:					
Limited	108,000	15	272	3/20	56
Intermediate	218,000	35	365	3/20	76
Full	(2)	(2)	(2)	(2)	(2)

[1] Most of the reconnaissance geophysics has been completed in the Mid-At[anfic region and USGS has the data.
2 Unknown.

The number of holes drilled shown in Table III–2 was derived from an estimate of a reasonable number of blocks to be anticipated in each of the major traps found in each area. OTA assumed that at least three dry holes would be drilled on each uninterrupted trap and two dry holes on each block associated with that trap. If any discovery is made, the number of holes drilled would be doubled. Discoveries are arbitrarily assumed to occur in one half of the total traps and one half of the associated blocks. The number of blocks per major trap

are assumed to be 4 in the Mid-Atlantic, 6 in the Gulf of Alaska, and 8 in Southern California. Small traps are assumed to have only one associated block.

The estimated number of rigs required for each program is based on drilling 4 holes per rig per year in the Mid-Atlantic (16,000 ft. average depth), 5 holes per rig per year in the Gulf of Alaska (10,000 ft. average depth), and 6 holes per rig per year in Southern California (10,000 ft. average depth). Assuming total drilling program lengths of 3 years for the Atlantic, 4 years off Southern California, 5 years off Alaska, the minimum and maximum numbers in any year are then estimated. Judgments about the reasonable number of rigs that could be mobilized in a given time period are the basis for OTA'S rig and time projections.

It should be noted that these estimates. as well as estimates of time and cost, are based on very general and broad judgments and represent only the limited knowledge which exists concerning these frontier areas.

In addition to geophysical surveys and drilling programs, it is recognized that a substantial management and analysis group would be required for directing the exploration in each area. This staff, whose composition is shown below, would be needed for each area and would be employed for the duration of any level of exploration program (limited, Intermediate, full).

Exploration program management and analysis 8taff

Job description	*Number of personnel*
Managing officer	1
Managing offiicer assistant	1
Chief civil engineer	1
Chief drilling engineer	1
Chief exploration scientist	1
Senior geophysicist	1
Senior geologist	1
Senior finance officer	1
Legal affairs officer	1
Staff petroleum engineers	12
Staff geologists	12
Staff geophysicists	12
Marine superintendents	4
Operations men (materials)	12
Accounting personnel	6
Secretaries	12
Clerks	12
Typing	12
Drafting	12
Total	115

NOTE: **The foregoing assumes that purchasing, contracts, personnel departments and other support already exist.**

3. TIME REQUIREMENTS

Based on the foregoing assumptions, the required time to complete each phase of an exploration program, and the total time that would be required for each level of effort. are estimated in Table III--3. Differences in the estimates for the limited program are due to a difference in the extent to which geophysical surveys have already been completed in each area and in the number of holes that will have to

be drilled. These and other considerations, tempered by equipment factors, also determine the maximum number of rigs required in any one year. For the intermediate and full programs, there is no significant difference, by geographic area, in time required to complete the programs, so these are not listed in Table III–3. It is assumed that enough rigs would become available, over the longer time periods involved, to eliminate any time differences—in contrast to the limited program for each area.

Government programs have been estimated to need longer start-up times than industry programs. For any new program, some organizational and planning time is required. If government conducts exploration it will be necessary to recruit and train a sizeable management and analysis organization. Such organizations already exist within oil companies but would have to be established within government—and this would take some time. Delays may also be expected with the limited government exploration alternative, since rigs and other major equipment are of limited availability, and almost all major rigs and the available tubular goods production are currently contracted to oil companies for specific programs.

Table 1114 presents some estimates of earliest discovery and production dates based on following the exploration programs described.

Figure III-2 illustrates the relative time schedules and the principal elements of all proposed programs and also compares the alternatives with the existing method, denoting possible separation between exploration and production phases.

TABLE 111-3.–OCS EXPLORATION PROGRAMS–SUMMARY OF TIME ESTIMATES
(YEARS FROM DATE OF ISSUING NEW REGULATIONS)

	Limited program			Intermediate program (all areas)	Full program (all areas)
	Mid-Atlantic	Southern California	Gulf of Alaska		
Start-up time: [1]					
Industry	½	½	½	½	½
Government	1½	1½	1½	1½	1½
Geophysics prior to drill	½	½	1	1	1
Exploratory drilling	3	4	5	7	10–20?
Total program:					
Industry	4	5	6½	8½	20–30?
Government	5	6	7½	9½	20–30?

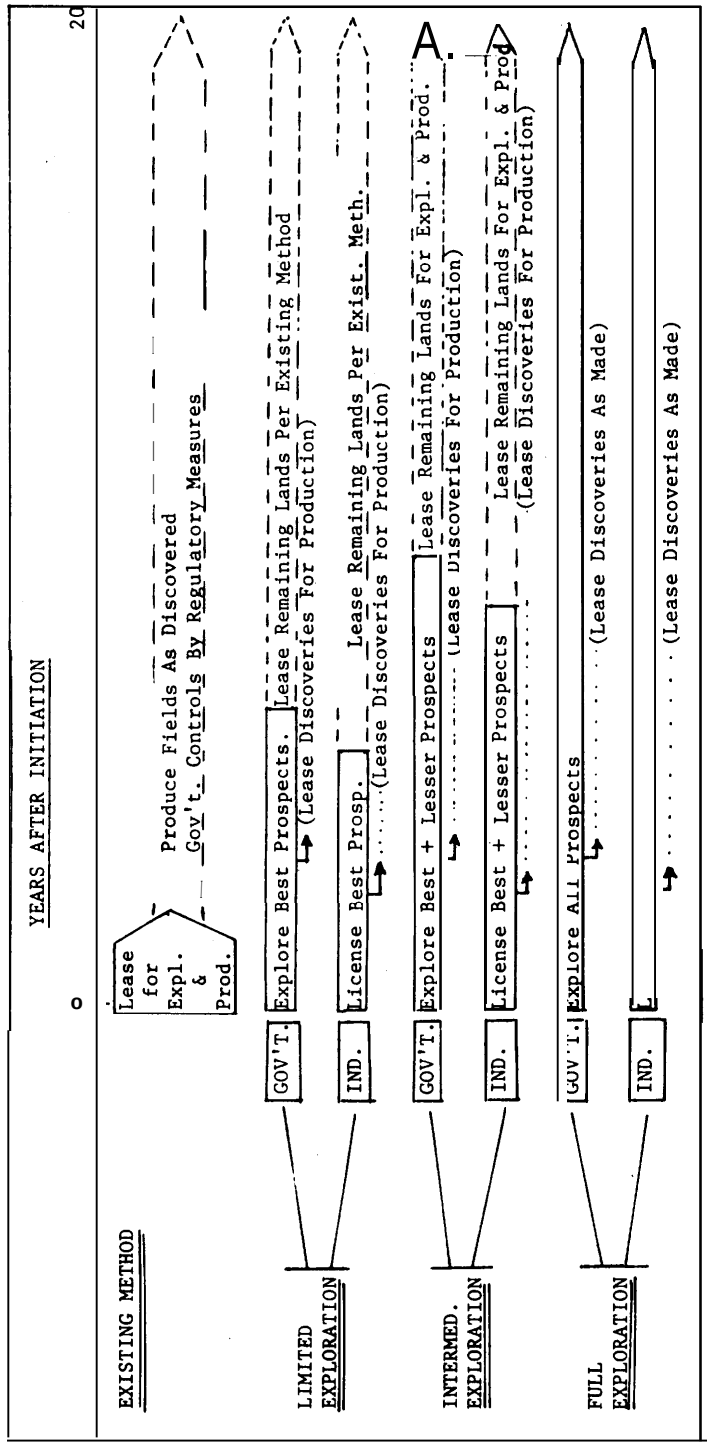
[1] The increased start-up time for Government programs includes time to structure a suitable management and technical organization, time for Government contracting procedures, plus delays due to the lack of availability of equipment which is now under contract to major oil companies.

TABLE III-4.—OCS EXPLORATION PROGRAMS—ESTIMATED DATES FOR EARLIEST DISCOVERY AND PRODUCTION BASED ON MOST REALISTIC ASSUMPTIONS AND STARTING PROGRAM IN ALL REGIONS IN 1975

	First discovery	Earliest date for one field, first production	Peak production
Industry Exploration Program:			
Mid Atlantic	1977	1981	1986
Southern California	1978	1982	1987
Gulf of Alaska	1979	1983	1988
Government Exploration Program:			
Mid Atlantic	1978	1983	1988
Southern California	1979	1984	1989
Gulf of Alaska	1980	1985	1990

Note: All three levels of exploration (limited, intermediate, full) yield the same dates.
Note: The Government program is assumed to require 1 year longer than industry to move to production. This incorporates time not required when the explorer is also the producer.

FIGURE III-2


TYPICAL OIL & GAS EXPLORATION ON THE OCS
PRINCIPAL ELEMENTS OF ALTERNATIVE METHODS
YEARS AFTER INITIATION
0
20
EXISTING METHOD
Lease for Expl. & Prod.
Produce Fields As Discovered
Gov't. Controls By Regulatory Measures
LIMITED EXPLORATION
GOV'T.
Explore Best Prospects.
Lease Remaining Lands Per Existing Method
(Lease Discoveries For Production)
IND.
License Best Prosp.
Lease Remaining Lands Per Exist. Meth.
(Lease Discoveries For Production)
INTERMED. EXPLORATION
GOV'T.
Explore Best + Lesser Prospects
Lease Remaining Lands For Expl. & Prod.
(Lease Discoveries For Production)
IND.
License Best + Lesser Prospects
Lease Remaining Lands For Expl. & Prod.
(Lease Discoveries For Production)
FULL EXPLORATION
GOV'T.
Explore All Prospects
(Lease Discoveries As Made)
IND.
(Lease Discoveries As Made)
Note: Solid lines denote most government control over public lands; dotted lines-least; the methods proposed progress from minimum to maximum control over longer periods of time.

4. ESTIMATED COSTS

Costs have been estimated for limited and intermediate levels of effort in each frontier area. based on the assumptions of the cost of the geophysical, drilling, management, and analysis efforts required to complete each alternative exploratory program. These costs are summarized in Table 111–5. Since it is not feasible at the present time to determine the extent of a full program, no costs are estimated for this alternative. Estimated management and analysis costs for both industry and government are baseed on the 115 staff persons identified in section C-2 at present salary levels. An additional 10% of the total costs shown for each of the government alternatives are to cover top management, planning and contractin, costs. {Geophysics and drilling costs are estimated to be the same for both government and industry. All costs are in constant, current dollars.

Geophysics costs are based on an average present rate of $400 per line-mile for data collection and reduction, and double this for seismic detailing. Geophysical costs are also estimated to be higher by a factor of two for Alaska.

Drilling costs are based on an average rig rate of $30,000 per day plus costs of supply boats, base and logistic support and drilling consumables, such as drilling mud. Costs are also escalated to account for Gulf of Alaska conditions not present in the Mid-Atlantic and California. The per well cost estimates thus range from $3.5 million in Southern California, $4.6 in Mid-Atlantic to $5.0 million in the Gulf of Alaska.

In Table III–6, cost estimates per barrel of oil potentially discovered under the most optimistic assumptions (high level of discovery) are shown. To put these costs in perspective, the per-barrel cost of imported oil is currently on the order of $10–$12.

TABLE 111-5.–OCS EXPLORATION PROGRAMS– SUMMARY OF COST ESTIMATES
(ALL COSTS IN MILLIONS OF CURRENT DOLLARS)

	Industry			Government		
	Mid-Atlantic	Southern California	Gulf of Alaska	Mid-Atlantic	Southern California	Gulf of Alaska
Management and analysis coats:						
Limited	20	25	30	70	115	180
Intermediate	40	40	40	180	170	250
Full	(2)	(2)	(2)	(2)	(1)	(2)
Geophysics costs:						
Limited	25 [1]	30	100	[1] 25	30	100
Intermediate	55	60	170	55	60	170
Full	(2)	(2)	(9)	(2)	(2)	(2)
Drilling costs:						
Limited	500	850	1,400	500	850	1, 400
Intermediate	1, 320	1, 180	1,800	1, 320	1,180	1, 900
Full	(2)	(2)	(2)	(2)	(2)	(2)
Total program costs:						
Limited	545	905	1,530	595	995	1, 680
Intermediate	1, 415	1, 280	2,110	1,555	1, 410	2, 320
Full	(2)	(2)	(2)	(9)	(2)	(2)

1 80 percent of this cost is for purchase of data already collected.
2 Unkown.

Note: These cost estimates are not all inclusive and only include those items indicated. They do not include related costs which are not relevant to the comparison of programs, (i.e., impact studies, energy planning, leasing, etc.)

TABLE 111-6.-OCS EXPLORATION PROGRAMS–EXPLORATION COSTS RELATED TO MOST OPTIMISTIC DISCOVERY ASSUMPTIONS

	Cost—Dollars per barrel 1	
	Industry	Government
Mid-Atlantic:		
Limited.:	0.14	0.15
Intermediate,	0.24	0.26
Southern California:		
Limited-:	0.45	0.50
Intermediate	0.43	0.47
Gulf of Alaska:		
Limtied-,	0.17	0.19
Intermediate	0.16	@.17

I Includes no land acquisition costs.

D. Description of Exploration Alternatives

In this section each of the six exploration alternatives will be described. These descriptions incorporate the assumptions stated and discussed in section C.

1. LIMITED GOVERNMENT EXPLORATION

Limited government exploration would be initiated and managed by the Department of the Interior. Within Interior, the Bureau of Land Management (BLM) and the U.S. Geological Survey (USGS) would jointly plan the exploration program. With the advice of USGS, BLM would contract for seismic and drilling services. USGS would oversee and regulate the conduct of the exploration and interpret the results. BLM would provide both the results and their interpretations to designated federal and state agencies and make both the results and interpretations available to the public.

As noted in Section C, the Department of the Interior would require additional staff to be capable of initiating, managing, and analyzing the results of an exploratory program that includes drilling. OTA estimates that a total of 115 persons would be required for each frontier area under both the limited and intermediate programs (see the list of personnel requirements in section C).

The seismic and drilling services for which Interior would contract include area reconnaissance together with geophysical surveys and exploratory drilling of all major traps. OTA estimates that it would take government a total of 5 years to complete a limited program in the Mid-Atlantic, 6 in Southern California, and $7^{1}/_{2}$ in the Gulf of Alaska. (See Tables III–2 and III–3). Total program costs, including management and analysis, are estimated at $595 million for the Mid-Atlantic, $995 million for Southern California, and $1.68 billion for the Gulf of Alaska. (See Table III–5). Given the most optimistic discovery rate, limited exploration costs per barrel are estimated at $.15 in the Mid-Atlantic, $.19 in the Gulf of Alaska, and $.50 in Southern California. (See Table III–6.)

OTA estimates that a limited exploration program initiated in 1975 could result in an initial discovery of recoverable resources in 1978 in the Mid-Atlantic, in 1979 in Southern California and 1980 in the Gulf of Alaska. At the earliest, production would begin five -years later and peak production reached five years after that. (See Table 1114.)

Under the limited government exploration alternative, OTA assumes that government would decide at the time of discovery whether recoverable reserves are to be developed and produced or held in reserve. Methods for making recoverable reserves available to industry for development and production are discussed in Chapter IV as a part of the evaluation and comparison of alternatives.

No other exploration would be permitted within the three frontier areas while the limited government exploration program is underway. Once the program is completed, however, unexplored lands and lands rejected during limited exploration would either be held in reserve, made available for exploration by industry under a permit-leasing or licensing system, or explored through extension of the program to the intermediate level.

Under this exploration alternative, government would obtain exploration data and interpretations on the major traps in the Mid-Atlantic, Southern California, and Gulf of Alaska frontier areas. This would include estimates of the recoverable reserves to be discovered. Since these data would be under government's exclusive control, both the data and their interpretations could be publicly disclosed and government would retain full control over whether and when to produce any recoverable reserves that are discovered.

In short, government would exercise full management control and have complete control of the data, but government would also pay the full cost of exploration and, at the completion of the limited program, would have data on only the largest traps in the three representative frontier areas.

The major aspects in the limited government exploration alternative are summarized in Table 111–7.

TABLE III-7.–A SUMMARY OF THE LIMITED GOVERNMENT EXPLORATION ALTERNATIVE

	Mid-Atlantic	Southern California	Gulf of Alaska	Total
Exploration elements:				
Seismic line miles [1]	4,000	60,000	108,000	172,000
Holes drilled [2]	100	238	272	610
Time required (years): [3]				
To complete	5.0	6.0	7.5	NA
To first discovery	3.0	4.0	5.0	NA
To production	8.0	9.0	10.0	NA
To peak production	13.0	14.0	15.0	NA
Costs (millions of dollars): [4]				
Management and analysis [5]	70.0	115.0	100.0	285.0
Geophysical [6]	25.0	30.0	100.0	155.0
Drilling [7]	500.0	850.0	1,400.0	2,750.0
Potential resources: [8]				
Billions of barrels (oil)	0–8	0–4	0–18	0-30
Trillions of cubic feet (gas)	0–45	0–7	0–90	0-142

[2] Based on OTA estimate of 10,000 line miles for each 5,000 square miles plus an additional 500 miles per trap or detailing.

[2] Based on OTA estimate that at least three dry holes would be drilled on each uninterrupted trap and two dry holes in each block associated with that trap. Discoveries are assumed in 50 percent at the traps and 50 percent of the associated blocks. The number of blocks per major trap are assumed to be four in the Mid-Atlantic, six in the Gulf of Alaska, and eight in southern California. When a discovery occurs, the number of holes to be drilled is doubled.

[3] OTA estimate based on the number of seismic line miles and holes to be drilled. This estimate includes the time Government would require to develop its in-house management and analysis capability and the delays Government would be expected to encounter in contracting for drilling services.

[4] Current, constant dollars.

[5] OTA estimate using current salary levels for the 115 staff persons listed in section 111–C. Government cost add an additional 10 percent to cover top management, planning and contract costs.

[6] Based on $400 per line mile for data collection and reduction. Costs are increased by a factor of two for seismic detailing.

[7] Based on an estimated rig rate of $30,000 per day plus the cost for support and consumables. With average well depths of 16,000 feet in the Mid-Atlantic, and 10,000 feet in southern California and the Gulf of Alaska, per well costs are estimated to be $3.5 million in southern California, $4.6 million in the Mid-Atlantic, and $5.0 in the Gulf of Alaska.

[8] USGS estimate, Draft EIS, Vol. 1, p. 676 and Vol. 2, pp. 60–61, and 139–140.

2. LIMITED INDUSTRY EXPLORATION

Limited industry exploration would be initiated by the Department of the Interior under a permit, leasing, or licensing system for specified frontier areas. Industry explorers would be required to report their results to Interior on monthly basis. USGS would regulate the conduct of the exploration and interpret the results. BLM would be responsible for furnishing both the results and their interpretation to designated federal and state agencies and would make both the results and interpretations available to the public.

Unlike government, which would have to develop an in-house capability, 011 companies already possess the management and analysis capabilities needed to plan, manage and analyze the results of a limited exploration program that includes a substantial amount of exploratory drilling.

OTA estimates that it would take industry a total of 4 years to complete a limited exploration program in the Mid-Atlantic, 5 years in Southern California, and 6.5 years in the Gulf of Alaska. (See Tables III-2 and III-3.) Total program costs, including management and analysis, are estimated to be $545 million for the Mid-Atlantic, $9o5 million for Southern California, and $1.53 billion for the Gulf of Alaska. (See Table III–5.) Assuming the most optimistic rate of discovery, limited industry exploration costs are estimated to be $.14 per barrel in the Mid Atlantic, $.17 per barrel in the Gulf of Aklaska, and $.45 per barrel in Southern California (See Table III-6).

It is estimated that initiation of limited industry exploration in 1975 would result in an initial discovery in 1977 in the Mid-Atlantic, in 1978 in Southern California, and in 1979 in the Gulf of Alaska. The earliest production could be expected in 1981, 1982 and 1983 respectively; and peak production could be anticipated five years later in each case. (See Table 1114.)

Government would decide at the time of discover-y whether recoverable reserves are to be produced or held in reserve. The evaluation and comparison of exploration alternatives in Chapter IV includes an identification and discussion of alternative means for making recoverable reserves available to industry for production and development.

No exploration other than that being conducted as a part of the limited industry program would be permitted. However, after industry completes its limited program, both unexplored lands and lands rejected as unproductive b-y the limited explorer would either be held in reserve or made available to industry for exploration under a permit, leasing, or licensing system.

The limited industry exploration alternative provides for government to obtain exploration data and interpretation on all major traps (estimated as capable of containing 500 million or more barrels) in areas specified by government. This would include data on any recoverable reserves that are discovered. Government could also publicly disclose the data it obtains from industry and either its own or industry's interpretations of these data. And government could retain control over whether and when discoverable reserves would be produced. However, public disclosure of data and their interpretations and a separate government decision for producing recoverable reserves might

well adversely affect industry's incentive to explore. Consequently, it may be necessary to link the limited industry exploration alternative to a development alternative which overcomes this problem.

Some of the major aspects of limited industry alternative are summarized in Table III–8.

TABLE III-8.–A SUMMARY OF THE LIMITED INDUSTRY EXPLORATION ALTERNATIVE

	Frontier area			
	Mid-Atlantic	Southern California	Gulf of Alaska	Total
Exploration elements:				
Seismic line miles[1]	1,000	30,000	108,000	173000
Holes drilled[2]	100	238	272	610
Time required (years):[3]				
To complete	4.0	5.0	6.5	NA
To first discovery	2.0	3.0	4.0	NA
To production	6.0	7.0	8.0	NA
To peak production	11.0	12.0	13.0	NA
Costs (millions of dollars):[4]				
Management and analysis[5]	*20.0*	25.0	*30.0*	*75.0*
Geophysical[6]	*25.0*	30.0	100.0	*155.0*
Drilling[7]	*500.0*	850.0	1,400.0	*2,750.0*
Potential resources:[8]				
Billions of barrels (oil)	0–8	0–4	0-18	*0-30*
Trillions of cubic feet (gas)	0–45	0–7	&90	*&142*

[1] Based on OTA estimate of 10,000 line miles for each 5,000 square miles plus an additional 500 miles per trap for detailing.

[2] Based on OTA estimate that at least 3 dry holes would be drilled on each uninterrupted trap and 2 dry holes in each block associated with trap. Discoveries are assumed in 50 percent at the traps and 50 percent of the associated blocks. The number of blocks per major trap are assumed to be 4 in the Mid-Atlantic, 6 in the Gulf of Alaska, and 8 in southern California. When a discovery occurs, the number of holes to be drilled is doubled.

[3] OTA estimates based on the number of seismic line miles and holes to be drilled. This estimate includes the time Government would require to develop its in-house management and analysis capability and the delays Government would be expected to encounter in contracting for drilling services.

[4] Current, constant dollars.

[5] OTA estimate using current salary levels for the 115 staff persons listed in sec. III–C. Government costs add an additional 10 percent to cover top management, planning, and contract costs.

[6] Based on $400 per line mile for data collection and reduction. Costs are increased by a factor of 2 for seismic detailing.

[7] Based on an estimated rig rate of $30,000 per day plus the cost for support and consumables. With average well depths of 16,000 feet in the Mid-Atlantic, and 10,000 feet in southern California and the Gulf of Alaska, per well costs are estimated to be $3,500,000 in southern California, $4,600,000 in the Mid-Atlantic, and $5,000,000 in the Gulf of Alaska.

[8] USGS estimate, draft EIS, vol. 1, p. 676 and vol. 2 pp. 60–61, and 139–140.

3. INTERMEDIATE GOVERNMENT EXPLORATION

Intermediate government exploration differs from a limited program only in the level of effort required. This would not change the way in which the program would be initiated and managed by the Department of the Interior. An intermediate program would, of course, take longer, cost more, and be expected to result in the discovery of more recoverable reserves.

The major aspects of the intermediate government alternative are summarized in Table III–9.

TABLE III-9.–A SUMMARY OF THE INTERMEDIATE GOVERNMENT EXPLORATION ALTERNATIVE

	Frontier areas			
	Mid-Atlantic	Southern California	Gulf of Alaska	Total
Exploration Elements:				
Seismic line miles [1]	62,000	118,000	218,000	398,000
Holes drilled [2]	263	347	365	975
Time required (years): [3]				
To complete	9.5	9.5	9.5	NA
To first discovery	3.0	4.0	5.0	NA
To production	8.0	9.0	10.0	NA
To peak production	13.0	14.0	15.0	NA
Costs (Millions of dollars): [4]				
Management and analysis [5]	180.0	170.0	*250.0*	600.0
Geophysical [6]	55.0	60.0	*170.0*	285.0
Drilling [7]	1,320.0	1,180.0	*1,900.0*	4,400.0
Potential Resources: [8]				
Billion of barrels (oil)	0–8	0-4	0-18	*0-30*
Trillions of cubic feet (gas)	0–45	0-7	0-90	*0-142*

[1] Based on OTA estimate of 10,000 line miles for each 5,000 square miles plus an additional 500 miles per trap for detailing.

[2] Based on OTA estimate that at least 3 dry holes would be drilled on each uninterrupted trap and 2 dry holes in each block associated with that trap. Discoveries are assumed in 50 percent at the traps and 50 percent of the associated blocks. The number of blocks per major trap are assumed to be 4 in the Mid-Atlantic, 6 in the Gulf of Alaska, and 8 in southern California. When a discovery occurs, the number of holes to be drilled is doubled.

[3] OTA estimates based on the number of seismic line miles and holes to be drilled. This estimate includes the time Government would require to develop its in-house management and analysis capability and the delays Government would be expected to encounter in contracting for drilling services. The time to complete each area is the same due to adjustment in the number of rigs allocated to each (see table III–2).

[4] Current, constant dollars.

[5] OTA estimate using current salary levels or the 115 staff persons listed in sec. III–C. Government costs add an additional 10 percent to cover top management, planning, and contract costs.

[6] Based on $400 per line mile for data collection and reduction. Costs are increased by a factor of 2 for seismic detailing.

[7] Based on an estimated rig rate of $30,000 per day plus the cost for support and consumables. With average well depths of 16,000 feet in the Mid-Atlantic, and 10,000 feet in southern California and the Gulf of Alaska, per well costs are estimated to be $3,500,000 in southern California, $4,600,000 in the Mid-Atlantic, and $5,000,000 in the Gulf of Alaska.

[8] USGS estimate, draft EIS, vol. 1, p. 676 and vol. 2 pp. 60–61, and 139–140.

4. INTERMEDIATE INDUSTRY EXPLORATION

Intermediate industry exploration is basically the same as the limited industry alternative except that it would take longer, cost more, and result in the discovery of a larger quantity of recoverable reserves. Major aspects of this alternative are summarized in Table 111–10.

TABLE III-10.–A SUMMARY OF THE INTERMEDIATE INDUSTRY EXPLORATION ALTERNATIVE

	Frontier area			
	Mid-Atlantic	Southern California	Gulf of Alaska	Total
Exploration elements:				
Seismic line miles [1]	62,000	118,000	218,000	390,000
Holes drilled [2]	263	347	365	975
Time required (years): [3]				
To complete	8.5	8.5	8.5	NA
To first discovery	3.0	4.0	4.0	NA
To production	7.0	8.0	8.0	NA
To peak production	12.0	13.0	13.0	NA
Costs (millions of dollars): [4]				
Management and analysis [5]	40.0	40.0	40.0	120.0
Geophysical [6]	55.0	60.0	170.0	285.0
Drilling [7]	1,320.0	1,180.0	1,900.0	4,400.0
Potential resources: [8]				
Billions of barrels (oil)	0–8	0–4	0–10	0–30
Trillions of cubic feet [3] (gas)	0–45	0–7	0–90	0–142

[1] Based on OTA estimate of 10,000 line miles for each 5,000 square miles plus an additional 500 miles per trap for detailing.
[2] Based on OTA estimate that at least 3 dry holes would be drilled on each uninterrupted trap and 2 dry holes in each block associated with that trap. Discoveries are assumed in 50 percent at the traps and 50 percent of the associated blocks. The number of blocks per major trap are assumed to be 4 in the Mid-Atlantic, 6 in the Gulf of Alaska, and 8 in southern California. When a discovery occurs, the number of holes to be drilled is doubled.
[3] OTA estimates based on the number of seismic line miles and holes to be drilled. This estimate includes the time Government would require to develop its in-house management and analysis capability and the delays Government would be expected to encounter in contracting for drilling services. The time to complete each area is the same due to adjustment in the number of rigs allocated to each (see table III–2).
[4] Current, constant dollars.
[5] OTA estimate using current salary levels for the 115 staff persons listed in sec. III–C. Government costs add an additional 10 percent to cover top management, planning, and contract costs.
[6] Based on $400 per line mile for data collection and reduction. Costs are increased by a factor of 2 for seismic detailing.
[7] Based on an estimated rig rate of $30,000 per day plus the cost for support and consumables. With average well depths of 16,000 feet in the Mid-Atlantic, and 10,000 feet in southern California and the Gulf of Alaska, per well costs are estimated to be $3,500,000 in southern California, $4,600,000 in the Mid-Atlantic, and $5,000,000 in the Gulf of Alaska.
[8] USGS estimate, draft EIS, vol. 1, p. 676 and vol. 2 pp. 60–61, and 139–140.

5. FULL GOVERNMENT EXPLORATION AND FULL INDUSTRY EXPLORATION

Although both full government and full industry programs were identified earlier as possible exploration alternatives, OTA has not been able to make what it considers to be reasonable estimates of the amount of seismic surveying and drilling that a full exploration program would require. However, members of the Task Force were able to agree that an exploration program designed to find all recoverable reserves would be a massive undertaking, Such an effort would probably take at least 20 years and cost some tens of billions of dollars.

Chapter IV.—Evaluation and Comparison of Exploration Alternatives

A. Introduction

The issues against which the exploration alternatives described in Chapter III were evaluated are identified and discussed in Chapter II. These can be summarized as follows:

1. Public Availability of Resource Information.
2. Public Control of Resource Development.
3. Return to the Public.
4. Efficiency of Exploration.

The exploration alternatives described in Chapter III all deal with separation of exploration from production as a means of resolving one or more of the above issues. It should be recognized that there are numerous other methods of modification of present lease practices to resolve one or more of the issues even though only one to two maybe indicated herein.

This Chapter is organized into three sections. The first compares limited, intermediate and full exploration programs. The second includes comparisons of systems which separate exploration from production with present leasing practices, as well as with possible modification of the present practices. These are considered in the context of the issues stated above. The third section then compares industry-executed to government-contracted exploration programs.

B. Consideration of Limited, Intermediate and Full Exploration Programs

In evaluating whether limited, intermediate or full exploration programs are most effective, the following observations can be made:

1. Any of these programs would start, with the best targets in each frontier area and proceed to the next best, as does the limited case. Therefore, the limited (large target) program would in fact be the first phase of an intermediate or full program.
2. A full program is impossible to quantify since no information on the number or size of small traps, if any, is available.
3. On the assumption that 50% of the total potential reserves exists in the traps included in the limited program, it is the most cost-effective or least-risk program.

It is evident that an intermediate program represents only an extension of a limited program. and that a full program is an extension of an intermediate program. Consequently, should it be decided to proceed with any exploration program preceding lease sales in frontier areas, the greatest, flexibility can be achieved, without additional penalty to the resolution of the issues, by beginning with a limited program and deferring decisions to extend the program to an intermediate or full scale.

C. Comparison of New Exploration Systems (Government or Industry) to Present Leasing Practices—With Comment on Modification of Present Practice

This section will evaluate how the alternatives would affect resolutions of the issues identified earlier by comparing the proposed, new exploration system (called "Separation System[1]") with the "Present Practice" and "Other Possibilities".

1. PUBLIC AVAILABILITY OF RESOURCE INFORMATION

Separation System

This method would require public disclosure of all resource information when it becomes available.

Since a controllable delay between discovery and production would exist, and since all resource data would be made public, there would be adequate information and time for impact planning.

Present Practice

Present practice requires that raw data from drilling results be provided to the Department of the Interior by the lessee. Early public disclosure is currently prohibited by regulation, and the industry is strongly opposed for competitive reasons to public disclosure of drilling data. For example, the lessee owning rights to a tract which covers only a portion of a trap derives information that is extremely valuable in evaluating adjacent tracts overlying the same trap. Thus, competitive considerations make the lessee strongly opposed to releasing data that could help the competition in future lease sales.

Other Possibilities

Leasing by trap instead of tract or by mandatory unitized exploration [1] would greatly reduce industry opposition to releasing data.

2. PUBLIC CONTROL OF RESOURCE DEVELOPMENT

Separation System

The new system would retain production decisions in the hands of the government; as such the development rate can be publicly controlled. However, any delays in eventual production causedby the government after discovery could serve to reduce the present value of the resources, the costs of which would have to be weighed against social costs of the probable impacts from production.

This method would provide a mechanism to lease for production as resources are discovered, if desired. However, any new system would delay significantly the start of production for three reasons: (1) after discovery, the government would require a certain amount of time to decide whether a production lease would be offered, (2) a lease sale would be held, and (3) a production platform could not be ordered

[1] **See Definition of Terms, p. vi!.**

until after the production lease was awarded.[2] (Normally the industry would order a platform soon after the initial discovery.)

The new system would allow for indefinite deferral of production, if desired. It also would allow for control of the rate of production by stipulating conditions for production in the lease. However, costs of deferral or non-production would have to be weighed against social cost of producing as discovered.

Present Practice

The present system has no provision, except those covering war and environmental emergencies, to postpone production indefinitely.

Other Possibilities

Provisions could be added to present lease requirements to provide authority for postponements. However, such provisions would have to be structured so that bids would not be reduced to discount the uncertainty of postponement.

(Presently development plans require approval by the Department of the Interior [and other agencies], which would probably also be required under a new system. Normally approval of plans has been without delay .)

Leases coul d be readily modified to require plans as to how the rate of development might be reduced to moderate impacts; however, a mechanism would have to be devised to compensate the lessee for modifications of his plan. Otherwise, it is possible that all bids would be lowered to discount the uncertainty and potential costs of deferred production.

Other possibilities include various forms of work programs* which could include profit-sharing, royalty, or still other methods of compensating both the producer and the government. The principal provisions any of these would require are for termination, and for compensation to the producer (from the government share) for any real costs the producer would incur in slowing or changing the production plan to accommodate government (social) needs or to moderate impacts.

3. RETURN TO THE PUBLIC

Rate of return is affected by the reaction of bidders to the reduction of uncertainty of resource existence and size, which is discounted by probability of the existence of the resource. Existence, and to some extent size, of the resource is established through exploration thus reducing or eliminating the discounting of bids madefor production rights.

Quantifying the precise effects on government returns is very difficult; however Section IV–E contains a discussion of the factors associated with changes in uncertainty.

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[2] Platforms cannot be inventoried because they must be tailor made for water depth, bottom conditions, sea conditions and number of wells.

* A work program is an agreement to perform a stated amount of exploration as part (or all) of the bid for lease, and may be in lieu of some or all of the cash otherwise offered.

4. EFFICIENCY OF EXPLORATION

Separation System

The proposed new system which is designed to explore on a full trap instead of a 5,670 acre tract basis, and utilizes a priority selection of best target first, is the most efficient method. However, uncertainties are introduced in: (a) the government case, in terms of lack of government experience and equipment availability; and (b) the industry case in terms of the adequacy of an incentive system, either of which could affect the speed of exploration. This is addressed more fully in Section IV–D (below) which compares industry and government exploration programs.

Present Practice

As long as BLM continues to sell marginal tracts for exploration, sells by tract instead of trap, or does not require exploration by utilization, the existing system will be less efficient. At present, drilling equipment is used on marginal areas and several units are frequently used on the same traps, both of which contribute to inefficiency. The present system benefits from government and industry personnel experienced in administering and carrying out exploration programs. Equipment under contract by industry can be moved from marginal areas to new, high-priority leases acquired in a sale, thereby contributing to rapid exploration. Uncertainty in the present system derives from the threat of delays by states and environmental interest groups.

Other Possibilities

If traps instead of tracts were leased, and marginal land held for later years, with only the best traps offered in the next few years by BLM, then efficiency would be substantially increased. At present, an Environmental Impact Statement (EIS) is required prior to leasing. That EIS must cover exploration and possible production which may result from leasing. The statement must of necessity be very vague since the time, location, and size of the discovery, if any, is unknown. Therefore, the location, magnitude and rate of impacts can only be generalized.

If an EIS were to be made on exploration only, which has a far smaller impact than production, and a subsequent EIS were made after discovery, it would be possible to achieve far greater precision in estimating production impacts. The results could be a reduction in the criticism and delays caused b-y fears of the unknown consequences of leasing.

D. *Comparison of Government vs. Industry Alternatives*

This section will compare the government vs. industry alternatives within the proposed new systems for separating exploration from production that have been described in Chapter III.

Since we have eliminated further consideration of intermediate or full scale exploration programs, this discussion is confined to a comparison of a limited government program with a limited industry pro-

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gram. Both of these alternatives provide for the same degree of separation of exploration from production and follow the same procedures for exploration. In the government case, however, the government would conduct all operations and contract for services, while in the industry case, industry would conduct exploration by the means of a lease or license with incentives to explore.

This comparison is made relative to the same issues used in the previous comparison. The effects of the alternative systems will be discussed for each issue.

1. PUBLIC AVAILABILITY OF RESOURCE INFORMATION

a. Government

So long as it is practical to carry out a limited exploration program prior to a leasing decision for production in accordance with our treatment in this report, it may appear that resource levels could be determined, and the information made available to the public with comparable accuracy, regardless of who (industry or government) conducts the program. There is, however, a major uncertainty associated with government determination of oil and gas reserves, stemming from the fact that the exploration process is more of an art than a science. It is generally agreed. as well, that the experts in this art are now concentrated within industry, not within government. The government alternative thus tends to offer a lower probability of success in determining the extent of a resource.

b. Industry

The industry alternative would tend to produce resource information more rapidly if an adequate incentive were provided for exploration. The incentive system would also need to provide for public availability of this information. The time it would take to transfer information to the public within a structured industry exploration arrangement could modify the initial time advantage.

2. PUBLIC CONTROL OF RESOURCE DEVELOPMENT

The extent to which the development of whatever resources are discovered on the OCS can be controlled has been considered in the structuring of alternatives for separating exploration from production.

In the structuring of government and industry alternatives, we have made certain assumptions that provide the same choices for production of any discoveries made—regardless of whether government or industry conducts the exploration. That is, in either case, the same level of control could be exercised over development and production. This assumes that appropriate incentives for exploration could be given industry without reducing control over production.

a. Government

If the government alternative described were implemented, it is estimated that the earliest years by which one could expect production from the OCS areas studied are 1983 in the Mid-Atlantic and 1985 in

the Gulf of Alaska. Variations in these estimates could be expected if exploration were much more or much less successful than anticipated; the estimates reflect principally both the normal lead times necessary to obtain personnel and equipment and the time required to carry out the work efforts. Normal government procurement and contracting procedures are also assumed for the government exploration case. If lags inherent in government contracting (at each stage of major equipment purchases) could be reduced for this program, the time could be reduced.

b. *Industry*

Our estimates of earliest production from the OCS under the industry alternative range from 1981 for the Mid Atlantic to 1983 for the Gulf of Alaska. The same normal equipment lead times were assumed, but allowance was made for earlier start-up by industry because staff and equipment are assumed to be available at once. It was also assumed that industry would follow its normal practice of very rapid contracting and commitment of exploration resources.

3. RETURN TO THE PUBLIC

a. Government

Whether a discovery is made under either an industry- or government-conducted exploration program, the question of fair return to the public relates principally to possible mechanisms for leasing that discovery for production.

The government exploration alternative and subsequent reduction leasing would increase the assurance of a fair—not necessarily larger—return to the public. As discussed in Section E, below, the process of leasing after exploration, and the consequent reduction of uncertainty, would tend to bring any production bid much closer to expected value of the resource.

b. *Industry*

In the case of industry exploration, one of the major problems is to devise a system which will provide industry with adequate incentives to explore when discoveries either might not be produced at all or delayed for some unpredictable time. This in turn makes the issue of return to the public difficult to judge until a precise industry exploration mechanism, with incentives, has been developed. We have not developed such a system, but several have been proposed that offer certain advantages.[3] Mechanisms to be considered in developing such a system are identified below as they relate to two categories of bidding systems that can be envisioned.

(1)* LEASE *INCLUDES EXPLORATION AND PRODUCTION RIGHTS

In this category of alternatives, the incentive to explore is provided by giving the willing bidder preference in the right to develop. Of course, the difficulty posed by the concept of separation is how to make a lease award that is not also an *a priori* commitment to development. One possible way around this is to give the exploring lessee the right to develop *if* de-

[3] See Appendix 3.

velopment is to take place at all. If, on the other hand, the government decides not to develop a field, then the company could be reimbursed for its exploration and other costs.

Of course, systems in this category do not get at the entire problem of assuring fair return to the public, since bidding still takes place under great uncertainty (i.e., prior to exploration). In fact, there would be even more uncertainty introduced because of possible production delays or no-production decisions. Any or all of the proposed systems normally considered in attempts to improve fair return (e.g., royalty bidding, profit-share bidding, etc.) could be utilized, but each has some difficulties. Alternatives falling within the category of lease-with-production-rights are most viable under a profit-sharing system or work program.

(2) E'XPLORATION LEASE FOLLOWED BY PRODUCTION LEASE

In this category of alternatives, some systems could be devised to provide an incentive for the industry to only discover oil, with no production preference. With any discovery the government would then decide when (or whether) the oil should be produced, at which time it would put a production lease up for competitive bidding, just as in the government exploration case.

The basic difficulty is whether a system can be developed which will provide the industry with sufficient incentive to perform adequate exploration, carry with it no preferred right to develop, and at the same time not seriously affect other issues, such as fair return to the public. A competitive exploration lease sale could be held which would grant rights to the bidder offering to find oil at the lowest per barrel cost to the government, or a lease could be granted based on a work program plan which would include a fixed return to government for oil discovered. Many other systems could be proposed, but whether an adequate system can be designed will require study beyond the scope of the present effort.

4. EFFICIENCY OF EXPLORATION

a. Government

Chapter III presented estimates, based on both existing data and present practice, of the time and costs that would be involved for both government. and industry exploration. In terms of cost per barrel of oil discovered, assuming most optimistic discoveries in each case, the government alternative would cost only slightly more than the industry alternative. In the government case, the cost is naturally assumed to be a direct, appropriated expenditure which would be offset only if adequate discoveries were made and subsequently leased under a system assuring a fair rate of return. Estimated government exploration costs for a limited program range from approximately $595 million in the Mid-Atlantic to $1,680 million in the Gulf of Alaska.

The time efficiency of a government program is more difficult to assess. It appears that the start-up time and the early phases of exploration would be longer for government than for industry. This would be principally due to the government's need to obtain personnel and equipment resources for the government option comparable to those already existing within industry. Our estimates indicate that this would tend to delay early exploration, if conducted by the government, by ranges of 1 to 2 years. However, in a well-designed program, it is not possible to discern any difference after several years between government and industry options. The possibility remains that government would be less efficient than industry due to lack of competitive pressure, but such risk cannot be quantified.

b. *Industry*

Compared to the government case, exploration by industry would probably be more efficient on a cost basis, but when related to the incremental cost per barrel of oil discovered, the difference appears to be small. It should be noted that with industry exploration, all costs would be incurred by industry. Industry's return, however, would be expected to be obtained from either discount reductions of bids, direct payment by government, or subsequent shares of future production. How such a return would be implemented depends on the exploration licensing system devised.

The delays in the government exploration option noted above would indicate industry exploration would be more efficient. This perceived greater efficiency, however, could also be affected by methods selected for licensing, leasing, and providing incentives. In this case a maximum incentive would be needed.

E. Factors Affecting Return to the Public

The major impact of separation of exploration from production on the return to the public would result from the expected large reduction in the financial risks that are involved in the current leasing system.

Under the present system, the firm interested in bidding for an OCS lease is faced with major uncertainties about three basic factors: (1) the actual level of resources that will be found in the tracts under consideration: (2) the costs of finding and producing those resources; and (3) the price for which those resources can be sold when they are produced. Exploration prior to leasing for production can be expected to significantly reduce the uncertainties about both (1) and (2); whereas the long-run uncertainty about price (3) will not be affected by any of the alternatives under consideration.

Those reductions in uncertainty should affect the return to the public by affecting the amount that interested firms are willing to bid for the resources being offered for lease. Three general areas of effects will be considered: (1) improvement of the firm's estimate of the expected present value of the discoverable resources; (2) reduction of any discount of the bid resulting from aversion to risk; and (3) increase in competition in the bidding process.

1. Improved estimates of expected value of resources

One of the major determinants of the amount that a firm would be willing to bid on an OCS tract is the firm's estimate of the expected present value of the resources that maybe discovered in the tract. This estimate will be based on the firm's expectations about the amount of discoverable resources, the costs of exploration and production, and the price the resource will bring in the market. If these values were known with certainty, the firm could simply project the time streams of revenues and expenditures and calculate a net present value using the firm's minimum acceptable rate of return on investment as the discount rate.[4] The net resent value calculated in this way represents the return to the firm ab the normal return to capital that would be needed to induce the firm to produce the resource at all, and is sometimes referred to as economic *rent* **or excess** *profit.* The firm's estimate of this economic rent is the upper limit to the amount it would be willing to bid for the right to explore and develop an OCS tract. High competition in the bidding recess would lead the firm to offer all of the economic rent, as a bid, leaving it with a normal return on its investment.

Because the firm is in fact very uncertain about the actual values of the basic factors entering the calculations, it must make subjective estimates of the various values that those factors might take on and of the probabilities associated with each of these values. It then can calculate an *expected* present value of economic rent by calculating the present value for each of the possible combinations of values of the basic factors, weighting each calculated value by the probability that it will be the true value, and summing these weighted quantities. The resulting expected present value would be the upper limit to the amount the firm would be willing to bid for a tract.

In the past lease sales, the bidding firms' estimates of the expected present value of OCS tracts may not have been near the values they would have calculated if they had had no uncertainty about the basic variables, but there are no strong *a priori'* grounds for determining whether the firms have been on the average either under- or over-optimistic in their expectations. In either case, the reduction of the uncertainty about both discoverable resources and the costs of exploration that would result from exploratory drilling prior to leasing should move the bidders' estimates of the expected present value toward the true resource value.

On individual tracts, the change could be in either direction. If the exploration reveals the presence of hydrocarbons, the calculated expected value would go up significantlv; if all of the exploratory holes were dry, it would drop significantly. However, while exploration prior to leasing would clearly have a major impact on the amount bid on individual tracts, reducing it on some and raising it on others, it is not clear what the net effect would be when these changes are aggregated over the total area offered for lease. If the industry has, on the average, been conservative in its estimates of expected present value of economic rent. as could be the case if firms make conservative probability estimates as **a means of hedging against risk, then reduc-**

[4] **See Appendix 4 for a more detailed discussion of the points raised in this paragraph.**

tion of uncertainty by exploration prior to leasing should on the average increase the bidders' estimates of tract values. If competition for tracts is high, this should in turn lead to an increase in the average level of bids, other things being equal. On the other hand, if bidders have on the average been over-optimistic in their expectations, a reduction in uncertainty would by the same token lead to a downward shift in the average level of bids toward the true resource value of the tracts being offered.

It is difficult to predict the direction of the shift in the bidders' average estimates of expected tract values and the resulting effects on bids that would be produced by exploration prior to leasing. This would depend upon whether current industry tract evaluation procedures tend to overestimate or underestimate resource values. Of course, the competitive bonus bidding system tends to award tracts to the bidder with the most optimistic estimate of resource potential, but one cannot simply conclude a priori that the winning bids have therefore necessarily been above the true resource values on the average, since other factors-such as the bidders assessment of the competitive environment—also affect the levels of bids. However, analysis of past performance suggests that on the average the high bidders may have in fact been over optimistic.

Several studies of the results of lease sales up to 1972 conclude that industry returns on OCS investments have not in general been above a normal return on capital, and ma indeed have been below normals If this conclusion is correct, it would imply that the industry has not on the average underestimated resource values, and may in fact have overestimated them. In this case, reduction of uncertain by exploration prior to leasing would tend to move bids downward on the average, ignoring for the moment the other effects discussed below.

One potential limitation of these historical analyses is the fact that the most reliable estimates of return on investment are those made on relatively old, mature tracts which have been thoroughly explored and are well into the production phase, which in general are tracts leased ten or more -years ago. If there have been significant improvements in the oil and as companies techniques for estimating resource values during the past ten -years, it would be necessary to exercise some caution in using the results of these historical studies to project the direction of the effects of reduction of uncertainty in future bidding. However, whether the effect of reduced uncertainty is to raise or lower the bidders' estimates of resource values on the average, it is clear that in either case these estimates will move towards the true value of the resources.

2. *Reduction of risk discounts*

Under the present system, investment in an OCS tract is an extremely risky proposition, because of the large bonuses required and the great uncertainty about amount of resources that will ultimately be recovered. This high level of risk can be expected to have two effects on the amount a firm is willing to bid on any particular tract. First, it may raise the cost of capital to the firm above the level

[5] See Appendix 4-J. W. Devanney, III, The *OCS Petroleum Pie,* MIT Report SG 7510, Feb. 28, 1975, p. 71,

required for more secure investments. This would have the effect of reducing the expected present value of the tract to the firm.; consequently, reduction of the uncertainty by determining the existence of hydrocarbon deposits prior to leasing could be expected to raise the expected present value by reducing the cost of capital used to bid on and explore the tract.

The second way in which aversion to risk affects the return to the public is its effect on the fraction of the net expected present value of a tract that the firm is willing to bid for the tract. As discussed above, under conditions of certainty, high competition would tend to force a bidder to offer the entire present value of the economic rent calculated for a tract as a bid, leaving the firm with nothing in excess of the normal return to capital. Similarly, under conditions of uncertainty, a firm that is completely neutral about risk would tend to bid the entire expected present value of the economic rent. However, if the firm is averse to risk, it would be willing to bid only some smaller amount, since uncertainty reduces the value to the firm of the expected income stream.

In fact, the increasing occurrence of joint bidding ventures for the purpose of spreading risk over a large number of investments indicates that even the major oil companies are risk averse at the levels of bids required to win the more valuable OCS tracts. Yet one can argue that the public, like an insurance company, can aggregate risks over such a large number of investments that it should be completely risk neutral, and thus should value an OCS tract at its true expected value, with no risk discount. Under these circumstances, the present leasing system would lead to winning bids that are lower than the value to the public of the tracks being sold, even if competition is high and the bidders do not on the average underestimate the expected value of the resources being offered.

It should be emphasized that this conclusion would in no way imply that OCS bidders somehow benefit at the public's expense because of any risk discount. A risk averse firm would only be willing to offer a maximum bid below the expected present value of a tract because a tract with highly uncertain production potential simply is not worth the expected present value to the firm; and no bidder could be expected to offer more than it thinks a tract is worth, even though the more risk-neutral public might value the same tract more highly. The effect of reduction of uncertainty by exploration prior to leasing would simply be to reduce this divergence between the value of a tract to a risk-averse bidder and its value to the public.

.?. *Effects of reduced uncertainy on competition*

The high risk nature of OCS investments under the current leasing system appears to reduce competition in two ways. First, the great uncertainty about the actual amounts of oil or gas that will be found may make it difficult if not impossible for small firms to obtain the large amounts of capital needed to bid on and explore OCS tracts. In contrast, identification and evaluation of hydrocarbon deposits prior to leasing should make financing much easier to obtain even for small firms, since the relatively wall-defined value of the resource in

the ground would provide substantial security for the investment. This should increase the number of firms participating in the bidding, and would thus increase the competitive pressure on each bidder to offer as a bid all of the expected present value of a tract beyond a normal return to capital.

The second way in which the high risk of the current leasing system tends to reduce competition is the pressure it places on even the largest oil companies to participate in joint bidding ventures in order to spread their total investment over a large number of tracts and thereby reduce the aggregate risk. Since one of the traditional requirements for competitive bidding is that there be no prebid communication among bidders, the communication that is necessary to arrive at joint bids may have some negative effect on the level of competition. Reduction of risk through exploration prior to leasing would reduce or eliminate the need for joint bidding as a means of spreading risk, which should in turn reduce prebid communication.

It is beyond the scope of this analysis to determine the current level of competition in OCS bidding. The studies of previous sales cited above suggest that competition for OCS tracts was high through 1972. However, several studies have argued that there has been a decline in competition since then, partly as a result of an acceleration of leasing.[6] To the extent that competition has in fact declined, a reduction of uncertainty by leasing only after exploration should increase competitive pressures by increasing the number of firms able to participate in the bidding. This would in turn tend to move the average level of bids towards the expected values of the tracts.

4. *Summary*

The foregoing discussion has considered three distinct effects of reduction of uncertainty by exploration prior to leasing: (1) improvement of bidders' estimates of the expected value of resources; (2) reduction of risk discounts; and (3) a potential increase in competition. The latter two effects would clearly tend to move a firm's bids upwards toward its estimates of expected tract values. However, the direction of the net impact of reduced uncertainty on the average level of bids would depend upon the first effect, namely the expected improvement in the bidders' estimates of tract values. If current tract evaluation techniques are generally over-optimistic, as appears to have been the case prior to 1972, better information prior to leasing could lead to a net reduction in the average level of bids. This would occur if the increases resulting from risk reduction and higher competition are more than offset by declines in the average of expected tract values. On the other hand, if current procedures do not lead to over-optimistic bids on the average, then the net direction of the change produced by the three effects we have discussed would clearly be upward. In either case, reduction of uncertainty would move the expected return to the public toward the true value of the resources being offered for sale.

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[6] Attachment F, "An Analysis of the Department of the Interior's Proposed Acceleration of Development of Oil and Gas on the Outer Continental Shelf," National Ocean Policy Study, March 5, 1975, pp. 17–25; and Devanney, op. cit., pp. 68–79.

APPENDIX 1

OCS LEASING PROCEDURES AND OCS SAFETY AND ENVIRONMENTAL PROTECTION ACTIVITIES OF THE DEPARTMENT OF THE INTERIOR

OCS LEASING PROCEDURES AND OCS SAFETY AND ENVIRONMENTAL PROTECTION ACTIVITIES OF THE DEPARTMENT OF INTERIOR

Under the OCS Lands Act of 1953, the Department of Interior is charged with administering the mineral development of the Outer Continental Shelf. This involves the following functions in the case of hydrocarbons: selection of areas for leasing; supervision of geological and geophysical exploration; meeting the environmental protection requirements of the National Environmental Policy Act; resource evaluation as a major component of determining the resource sale price; conduct of competitive bidding for the resources; supervision of exploratory drilling and production activities on awarded leases to assure environmental protection; safety and resource conservation; and environmental monitoring. The detailed conduct of these activities are carried on primarily by two agencies of the Department: the Bureau of Land Management and the Geological Survey.

November 1974

LEASING PROCEDURES FOR THE OCS

One of the first steps in the leasing process, which is primarily the responsibility of the Bureau of Land Management, is the selection of general areas for inclusion in a schedule. Factors underlying this selection include initial assessments of hydrocarbon potential, as estimated by both industry and Government, environmental resources that might be impacted by OCS development, alternative energy sources, the availability of technology and the proximity to markets. These are weighed and balanced in developing a schedule of proposed lease sales which will result in the most expeditious discovery and production of oil and gas. Once an area is scheduled for a possible sale, several activities occur: (a) an acceleration of industry's collection of G & G data under DOI permits, (b) DOI baseline studies, (c) the Department's tract selection-impact statement-sale decision process, and (d) detailed resource evaluation of each tract by the DOI.

Collection of G & G Data

Most of the information used by both the government and industry on the hydrocarbon potential of various OCS areas is acquired by geological and geophysical surveys. A considerable amount of this data is collected, under permits issued by the Geological Survey, by specialized data collection firms and sold and/or furnished to oil companies and the Department by its own scientists and through contracts.

This geological and geophysical data is used by industry in nominating tracts for lease and to prepare bids and is used by the Department for general sale area identification, for tract selection, environmental assessments, and resource evaluation.

Baseline Studies

Baseline studies are conducted in frontier areas to establish an environmental benchmark to permit continued monitoring after the sale during drilling and production to detect possible adverse effects from these operations. If such adverse effects are detected, additional regulations would be adopted to reduce or eliminate them. Studies cover data on geology, geophysics, biological environment, oceanography and meteorolgy associated with a particular region where offshore leasing may take place. These studies include primary research as well as analyzing existing information.

Call for Nominations

A request for nominations is published in the Federal Rtegister. All interested parties are urged to nominate specific tracts in a broad offshore region. In addition to stating which tracts in an area should be studied for possible leasing because of their oil and gas potentaal, all interested parties (State and local governments, environmental and conservation groups, and industry) are requested to provide environmen economic and technical information on why specific tracts within an area should be excluded from the leasing process because of significant enviornmental consideration or other resource conflicts, such as fishe or recreation.

Announcement of Tracts

The Department uses the nominations of industry, the resource and environmental information received from other Federal, State and local agencies, information received from the public, as well as its own resource, environmental, technological and economic information to select tracts for further analysis in the environmental impact statemen

Draft Environmental Statement (DES)

The draft statement is prepared at the field level where numerous contacts are made with the academic community, private research groups, environmental organizations, and State and local officials. These contacts are essential in order to help ensure a maximum understanding of the environmental and economic concerns and to help gain an understanding of how the local citizenry perceives the issues involved.

The draft statement includes, among other things, a description of the lease proposal, a description of the marine environment and the nearby onshore environment, a detailed analysis on a tract-by-tract basis of any possible adverse impacts on the environment, mitigating measures included in the proposal to reduce the possibility of adverse impacts, alternatives to the proposal and the consultation and coordination with others in preparation of the statement. It also covers the technology necessary for exploration, development, and production from the propos sale, as well as possible socio-economic impacts onshore.

The State Government controls and deals with onshore effects such as where pipelines come ashore, but we are actively seeking to work with the States in analyzing and controlling any possible adverse onshore effects.

Pertinent published and unpublished reports and resource evaluations are reviewed in preparation of the DES. When ready, it is submitted to the Council on Environmental Quality and made available to the public for consideration.

Public Hearing

Thirty days after publication of the DES, a public hearing is held. Environmental organizations, the academic community, government representatives, industry and the general public are invited to testify orally or in writing on the draft environmental statement in order to obtain the widest spectrum of views and information possible. All comments submitted for the public hearing are then considered in preparation of the final environmental statement.

Final Environmental Statement (FES)

The comments and contributions of data received through the public hearings are studied, and along with any other late-arising information, are incorporated into the finalenviromental statemnet FES.The FES is submitted to the Council on Environmental Quality and made available to the public.

Decision by the Secretary

At least 30 days after the submission of the FES to the Council on Environmental Quality, a final decision is made by the Secretary as to whether or not the proposed sale will be held. The Secretary considers all environmental, resource, economic, and technical information available in the DES, public hearing, and FES, as well as other pertinent information in order to weigh all factors related to his decision.

If the decision is that a sale will be held, determinations are made as to which tracts will be offered and what the lease terms will be. The lease terms may be tailored to any special requirements of any tract, and any tract may be withdrawn at any stage of this procedure on the basis of late-arising environmental data.

Notice of Sale

If a decision is made to hold a sale, a statement is published in the Federal Register* giving 30 days advance notice of the date of the sale, the tracts to be included in the sale and the terms under which the sale will be held.

Detailed Resource Evaluation of Each Tract

Following the announcement of tracts, and during the preparation and review of the environmental statement, the Geological Survey geologists, geophysists and petroleum engineers prepare detailed estimates of the

value of the oil and gas on each tract that is being considered for sale. These estimates are based upon geophysical and geological data acquired by industry under permit and by the Department itself, geological data the Department may have from other wells in the area or other geological studies, engineering data relative to the facilities and costs of discovering and producing the oil and gas, and factors considering the probability that oil and gas actually exists on a specific tract. These estimates are delivered to BLM immediately prior to the sale for BLM's use in determining whether a lease shall issue.

Sale

Leases are typically sold on the basis of cash bonus bidding with a *16 2/3%* fixed royalty. At the lease sale, sealed bids are opened and read. A decision is made to award a lease to the highest bidder only after the Department has evaluated that bid in terms of its own information concerning the tract's value. As discussed earlier, the Geological Survey spends the four to six months prior to a sale preparing detailed estimates of the value of oil and gas on each tract. These estimates, coupled with indicators of competition expressed at the sale, are used by the Department in determining if fair market value has been received.

Throughout the leasing process, the Department has continued liaison with the National Oceanographic and Atmospheric Administration (NOAA), Army Corps of Engineers, the U. S. Coast Guard, Environmental Protection Agency, and all other Government agencies that play a role in managing the OCS. The Department also seeks liaison with the appropriate coastal State agencies that play an active role in their State's coastal lands. The concern for sound Coastal zone management and liaison with these other Federal agencies does not stop with the issuance of a lease but continues through the exploration and production phases. If oil and gas is found, pipeline permits are issued by the Bureau of Land Management, but only after all safety precautions are met. A pipeline management planning system will be implemented in all frontier areas in order to minimize both onshore and offshore impacts. Pipeline routing on the OCS is determined after consultation with State officials who have authority over pipeline right-of-way in State waters and onshore. Special provisions are made to minimize hazards such as fishing nets becoming snagged on pipelines.

As earlier noted, each pipeline laid on the Outer Continental Shelf requires a permit, which is issued only after all stipulations have been met. Among these stipulations is a requirement that all pipelines in less than 200 foot water depth be buried to a depth of at lease three feet and all valves and taps are buried regardless of depth. Close attention is given to bottom stability, tides and currents. Each application is subjected to an environmental analysis, whether it comes ashore or not.

Shore-bound pipelines require permits both from the Federal Government and the adjacent State. Department of the Interior personnel work closely with State authorities to assure that the requirements of each are fully met as well as to select safe routes that will result in the minimum environmental damage and the least adverse onshore impact. It is only when hydrocarbons are found in commercial quantities that it is possible to fully analyze the impact and to develop plans for the routing of the pipeline and the associated onshore activity.

SAPETY AND ENVIRONMENTAL PROTECTION

Once a lease is issued, the exploration and production activities on t lease are under the supervision of the Geological Survey (USGS). This supervision is carried out through a set of rules and regulations that are implemented by field inspections and review of applications and plans. The rules and regulations (OCS Orders and Notices) are freque reviewed and revised through a process allowing for public, local go and industry input to reflect changing technology and environmental standards. The regulations that are now in effect and the various p described below are considerably more stringent than those existing at time of the Santa Barbara spills and will prevent a reoccurrence of tha event. The Inspection force presently numbers 62 and is scheduled to expanded to 87 in the coming fiscal year.

Supervision of Drilling Operations

Outer Continental Shelf oil and gas leases are ordinarily forfeited found productive within five years from date of issue. Exploratory ordinarily commences on the more promising tracts within a few months the lease is issued, although some leases may not be tested for two or years.

Before drilling can be initiated, the lessee must submit an "Applicati Permit to Drill." The application must include a contingency plan for handling emergencies during drilling such as spills and fires; a plan exploration and development; and specific information on such items the drilling rig, casing design, cementing program, drilling fluid and blowout preventer equipment. USGS geologists, geophysicists, and engineers review the application for compliance with orders and regulati and for potentially hazardous conditionathat may be antcipated. Unusal hazard conditions such as surface faulting, potential slide areas, shall gas pockets, or deeper abnormal pressures are made known to the opera If the possibility exists that the potential hazard might cause an a during the drilling operation, the lessee will be required to change t drilling plan. Only after the USGS is completely satisfied that safe and environmental requirements can be met will the permit to drill be

As the well is being drilled, casing and drilling fluid programs are followed as approved in the application. As the well reaches a predetermined depth range, a minimum of four remotely-controlled blowout preventers installed to prevent accidents which may result from penetrating u high-pressure zones.

Supervision of Production Operations

Following the discovery of an oil or gas field, production platforms are set and additional production wells are drilled. In established producing areas, such as offshore Louisiana, production on some leases may commecne as early as three years from the date of a lease sale. In frontier areas, where there is no existing petroleum Infrastructure, substantial production will probably require considerably more time.

Erection of production platforms, production drilling and production can proceed only upon the authority of an application to install production facilities approved in advance by the Geological Survey. Such applications are reviewed to assure that the platform design standards provide safeguards appropriate to water depth, surface and subsurface soil conditions, wave and current forces, wind and earthquake loading, and total equipment weight as a safeguard against platform failure. The subsurface safety system, the design of the structure, the surface processing and production equipment, and the personnel facilities, together with incoming and departing pipelines are checked against requirements to assure that all components will properly mesh in an effective platform safety system capable of detecting and stopping any leak.

Each barrel of oil produced must pass through a subsurface safety valve, an automatic fail-closed wellhead valve, a flowline protected by high and low pressure sensors, separators protected by high and low pressure sensors and a relief valve; and finally through pumps equipped with high and low sensors. Any abnormal operating condition will result in an automatic production system shut-in. Emergency shut-in controls, which provide a backup means to manually shut in the entire facility, must be located at strategic points on the platform.

To collect any platform contaminants, curbs and gutters must be installed in all deck areas and piped to a sump. Facilities to dispose of water produced with the oil must be designed to reduce the oil content of the disposed water to an average of not more than 50 ppm. In all cases where sewage is to be discharged, disposal systems which yield effluent that meet specified standards must be installed.

The USGS has the specific responsibility to inspect, monitor, and document the day-to-day activities of oil and gas lessees on the Outer Continental Shelf by on-site surveys and by witnessing the testing of safety and pollution control equipment. To facilitate inspections the OCS Orders and Regulations have been condensed *into* a checklist composed of questions that are answered by the inspection team either positively for compliance or negatively for noncompliance. Each incident of noncompliance requires that the inspector take a prescribed enforcement action which will result in either a warning or a shutdown of operations. If the incident results in a shutdown, the condition must be corrected before operations can be resumed.

Inspection teams composed of petroleum engineering technicians visit OCS facilities, traveling to the activities by helicopter and boat, observing the water surface for any incidents of pollution while en route. Additional flights are made for the sole purpose of pollution detection. Inspections of drilling rigs and related equipment in the Gulf of Mexico are conducted at least once during the drilling of each wildcat well and during drilling of the first development well from a platform. New production facilities are inspected upon commencement of operations. All major platforms are scheduled for inspection semi-annually. All drilling rigs and production platforms in the Dos Cuadras Field in Santa Barbara Channel are inspected daily.

Blowouts, fires, pipeline leaks, and other accidents are investigated by the inspection teams to determine the contributing factors involved in an accident so that proper steps may be taken to avoid such accidents in the future.

To inform all lessees about the probable cause of certain equipment failures, "Safety Alerts" are sent out to all OCS lessees to provide details of a hazardous situation that has resulted in an incident. This information enables lessees not involved in a particular incident to eva similar actuations in their own operations and thus help eliminate potent hazards in the future.

Efforts to Improve Safety of OCS Operations

Since the oil spill in Santa Barbara Channel in January 1969 a large numbe of specific actions have been taken to provide more effective supervision drilling and producing operations on the Outer Continental Shelf, includ the following:

- Inspection force increased from 7 in 1968 to the present 62, with an additional 25 programmed for FY 1976.

- Regulations updated and revised on all phases of drilling and production, including casing depths and cementing practices, blowout preventer equipment, remotely activated subsurface safety valves, pollution and waste disposal, and well completion. A 20-well platform now has about 300 safety devices.

- OCS supervision activities have benefited from the adoption of many recommendations contained in published studies on the OCS operations made by the National Academy of Engineering, a team of National Aeronautics and Space Administration experts, a team of USGS analysts

a University of Oklahoma study sponsored by the National Science Foundation, and the Council of Environmental Quality's environmental assessment of OCS oil and gas operations.

- Accident investigation procedures were established with the requirement that reports of major accidents be made available to the public.

- Operators are now required to submit contingency plans for oil spill containment and cleanup prior to any lease operations. Clean-up organizations and equipment are available to all areas where drilling and production are in progress.

A Review Committee to provide an independent audit of the effectiveness of USGS operations and procedures has been established under the aegis of the National Academy of Engineering.

- Three cooperative committees have been established with the American Petroleum Institute on offshore safety and anti-pollution research, standards, and training. An important result of these comittee actions has been the development and issuance of a specification for subsurface safety valves and a recommened practice for design, installation, and operation of subsurface safety valve systems.

- The "Safety Alert" system previously referred to was established.

The results of these measures to improve the safety performance of OCS operators are apparent in the extremely low frequency rates of pollution-causing accidents. Since the beginning of 1969 more than 5,000 wells have been drilled on the OCS. of which only four resulted in accidents that caused an oil spill of more than 250 barrels. All occurred in the Gulf of Mexico. In the Santa Barbara Channel more than 200 wells have been drilled without incident since 1969.

The total of all major accidents from both drilling and production was 13, of which eight resulted in any significant oil pollution. During this period the number of fixed structures on the OCS increased from 1,575 to more then 2,000.

APPENDIX 2

COMPARISON OF BILLS AMENDING THE OUTER CONTINENTAL SHELF LANDS ACT S. 426, S. 521 AND RELATED BILLS

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March 6, 1975

Comparison
of Bills Amending the
Outer Continental Shelf Lands Act:
S. 426, S. 521 and Related Bills

ELEMENT	S. 426	S. 521	COMMENTS
SHORT TITLE	Outer Continental Shelf Lands Act Amendments of 1975	Energy Supply Act of 1975.	
Bidding Systems	Sec. 202. would broaden the leasing bid options available to the Secretary. New options include: (A) cash bonus with fixed royalty, (B) variable royalty with fixed bonus, (C) cash bonus with sliding royalty, (D) cash bonus with fixed share net profits, (E) variable profit share with fixed bonus, (F) cash bonus with fixed royalty and net profit share, and (G) competitive performance work program in combination with the foregoing. Statutory restrictions on the lease area would be removed. Time limitations of 5 years to begin production would be retained.	Sec. 203. would expand the leasing options available to the Secretary to include only: (A) cash bonus with fixed royalty, (B) cash bonus with fixed net profit share, and (C) fixed cash bonus with net profit share. Acreage limitations on tract size would be retained but time for production from the lease could be extended up to 10 years to encourage development in deep water or under adverse conditions.	The OCS Act presently authorizes two bidding alternatives: (A) cash bonus with fixed royalty; or (B) variable royalty with fixed bonus. Both proposals provide added flexibility for selling lease tracts. S. 426 would permit the consideration of non-monetary factors in awarding leases.

ELEMENT	S. 426	S. 521	COMMENTS
Exploration or Survey Program			
Ministration	Sec. 209. would amend Sec. 19 of the OCS Act to establish an exploration program within the U.S.G.C. which would include all exploratory activities inclusive of exploratory drilling to prove the presence of oil or gas prior to leasing.	Sec. 202. would amend Sec. 19 of the OCS Act to direct the Secretary to initiate a survey program to develop geophysical information, but would not include exploratory drilling.	While S. 521 does not authorize Federal exploratory programs to prove the presence and extent of oil or gas S. p40 (National Energy Production Board Act of 1975) "would provide additional authority for expanded Federal exploratory activities (Sec. 202). Adminstration would be by an independent Board (Sec. 101).
Conduct of Survey	Subsec. l9(b). provides that U.S.G.S. can contract, use force account or purchase exploratory data. Exploratory wells could be contracted out or the Survey could drill such wells as may be required.	Subsec. 19(e) provides that Interior can purchase exploratory data commercially or collect data directly by force account. Subsec. l9(h) requires lessees to provide information on request.	S. 740 contains provisions similar to those of S. 426, including authorization to contract for exploratory drilling to prove the field (Subsec. 202(b)).
Implementation Plans	Subsec. l9(g) requires that the Secretary and NOAA submit an implementation plan for conducting exploratory operations, including a projected schedule, and areas which will be explored within the first 5 years to Congress within 6 months. A NEPA environmental impact statement would not be needed with the plan.	Subsec. 19(d) requires a plan be submitted to Congress by the Secretary which identifies the areas to be explored within the first 5 years. All exploratory activities would be excluded from the provisions of NEPA by subsec. 19(f).	A projected schedule of exploratory activities would be required by Subsec. 202(b) of S. 740.

ELEMENT	S. 426	S. 521	COMMENTS
Exploratory Areas	Subsec. 19(h)(1) directs the Secretary to promulgate regulations for determining areas to be explored, including consultation with the industry and State and local governments	No Provision	Selection of areas to be explored would be made with consultation of State and local governments and coordination with the CZMA (Subsec. 202(b)).
Coordination with CZMA	Subsec. 19(h)(2) ensures that the proposed exploratory schedule is consistent with State programs under the Coastal Zone Management Act (CZMA).	No Provision	While S. 426 requires "consistency" of Federal exploratory programs with State coastal zone programs under the intent of Sec. 307 of the CZMA, S. 740 speaks only in terms of "coordination" with coastal State programs (Sec. 202(b)).
Exploratory Drilling			
Notice	Subsec. 19(h)(3) requires that detailed information about projected exploratory drilling be published in the Fed. Reg. 120 days prior to drilling.	No Provision	
Environmental Impact Statement	Selection of areas for drilling would require an Environmental Impact Statement under the National Environmental Policy Act (Subsec. 19(h)(4)).	No Provision	S. 426 dispenses with the need for an EIS for the implementation plan under Subsec. 19(g); however, the provisions of Subsec. 19(h)(4) reflect the need for assessing the potential impact of exploratory drilling and the need for environmental assessment early in the exploratory-leasing-development sequence

ELEMENT	S. 426	S. 521	COMMENTS
Information Disclosure	Subsec. 19(d) requires that all exploratory data and information conducted under the Federal explorerory program, with exception of certain proprietary data, be made available to the public, without regard to exemptions provided by the Freedom of Information Act. Subsec. 19(f) provides that Interior and NOAA shall keep an updated set of maps based on the results of the exploratory program.	Subsec. 19(c) directs Interior and NOAA to prepare and publish map; and charts of OCS resources at least 6 months prior to a lease sale.	A Federal exploratory program would change the leasing procedure and obviate the need, to some extent, for proprietary exploration and confidentiality. Equality of access to public resource data should act to equalize competition among small independents and the consortia of major oil companies.
Private Exploration	Subsec. 19(c) permits Private geological and geophysical exploration upon issuance of an exploration permit (See Sec.206 amending Sec. 11 of the OCS Act). Exploratory drilling would not be permitted prior to lease.	Sec. 207. which amends Sec. 11 of the OCS Act, provides for private geological and geophysical exploration upon issuence of a permit.	Neither S. 426 nor S. 521 would discourage private exploration. Requirements for an exploratory permit merely incorporate the administrative procedures nov in effect in regard to certain exploratory activities. Prohibition of exploratory drilling by Subsec. 19(c) is not inconsistent with the present OCS Act which also does not authorize exploratory drilling prior to leasing.

ELEMENT	s. 426	: s. 521	: COMMENTS
Leasing Program and Schedule	Subsec. 18(b) requires the Secretary to maintain a leasing program which identifies the size, timing and location of leasing over a lo-year planning record.	**Sudsec.** 18(b) requires the Secretary to prepare a 10-year-leasing program. Estimates of the probable oil and gas resources and timimg ... rate of development, as well as identification of environmental hazards are to be included in EIS (Subsec. 18(&)). Nomination of sites is to include the public and be coordinated with CZMA (Subsec. 18(e)), and requires that the leasing pro&rem be published in the Fed. Reg. and submitted to Congress within 2 years (Subsec. *18(f)*). Subsec. 18(h) **requires** the Secretary to review and **reapprove the Leasing program annually.**	S 521 utilizes the Leasing Program authorized by Subsec. l8(b) as the major device for disclosing the projected leasing schedule. S. 426, on the other hand, creates the Leasing program as merely a long-range planning document to give sufficient prior notice to State and local governments and to Federal agencies of the areaa which may ultimately be chosen for sale (Subsec. 18(b)).
Leasing and Development Plan Approval	Subsec. 20(a) requires the Secretary to prepare a Leasing and Development Plan for areas in which oil and gas are discovered as a result of Federal exploration and drilling. The	Sec. 206 would amend Sec. 5 of the OCS Act to require that development **of** the Lease be in acccrdance with a development plar submitted by the lessee and approved by the Sec**retary.** However,	The Leasing and Development Plan required by subsec. 20(a) of S. 426 is the major planning and approval **document** preceeding lease sales. The potential of congressional review would make the Plan instrument for resolving conflicta **between** the **States and Interior prior to initiating leaee sales.**

ELEMENT	s. 426	: — s. 521	COMMENTS
	plan must be transmitted to Congress 90 days prior to placing leases up for sale. Congress may disapprove within 90 days by a resolution passed by either house stating its reason for disapproval.	no provision is made for a leasing and development plan analogous to that required by Subsec. 20(a) of S. 426.	
Planning Information	Subsec. 20(b) requires that a leasing and Development plan include information necessary for States to plan and provide for the impact of offshore oil end gas development.	No Provision	
Certification of Consistency	Subsec. 20(b)(12) requires that the Secretary certify that the Leasing and Development Plan is consistent with the State's coastal zone management programs in accordance with section 307 of the CZMA.	No Provision	
Cements by States	Subsec. 20(c)(1) requires that the Leasing and Development Plan be submitted to the Governors of the adjacent States for comment 60 days prior to transmittal to Congress required by Subsec. 20(a).	No Provision	

ELEMENT	S. 426	S. 521	COMMENTS
Petition for Postponement	A Governor may petition the Secretary for postponement of the lease sale for up to 3 years for cause. The Secretary may grant or condition a postponement, or deny it on grounds of national interest (Subsec. 20(c)(2)). Governor's comments and related correspondence must be included when Plan is transmitted to Congress (Subsec. 20(c)(3)).	Sec. 206 would amend Sec. 19 of OCS Act to provide for the request by a Governor of a costal State for a postponement of up to 3 years for cause similar to the provisions of Subsec. 20(c)(2) of S. 426; however, in the event of an adverse decision, an appeal would be made to a "National Coastal Resources Board" composed of Federal officials appointed by the President and chaired by the Vice President.	Sec. 56
Environmental Impact Statement	Subsec. 20(d) requires that the the EiS must accompany the Leasing and Development Plan when transmitted to Congress for approval under Subsec. 20(a).	No Provision	

			MENT
Environmental Impact Assessment, Baseline Studies, and Monitoring Lead Agency	Subsec. 21(a) designates NOAA as the "lead agency" for the purpose of complying with NEPA in all matters regarding the OCS Act.	Interio· would remain "lead agency" under the traditional definit·on of the CEQ guidelines for NEP..	NEPA places the responsibility for compliance with the EIS requirement on the Federal agency which initiates the Federal action. Subsec. 21(a) of S. 426, for the purpose of offshore oil and gas development, would amend this provision of NEPA. NOAA, as the agency with expertise in both marine and coastal resources, would assume the responsibility for preparing the EIS.
Baseline Studies	Subsec. 21(b) requires NOAA to conduct environmental baseline studies on the marine and coastal environments in consultation with the Secretary.	Subsec. 30(a) requires that the Secretary in consulation with NOAA must make a study of the area prior to leasing to establish environmental baseline data.	Under the present operation of NEPA, BLM as the lead agency enters agreements with NOAA to perform certain baseline studies of the marine environment. BLM has not retained NOAA to perform any onshore impact assessments for input into the EIS. NOAA, since it is not lead agency, cannot on its own initiative perform such studies without a request from BLM. Subsec. 21(b) would provide statutory authority for NOAA to undertake the necessary studies.
Scope of Impact Statement	Subsec. 21(c) adopts the list of parameters to be assessed by an EIS as promulgated by CEQ but embelishes them to reflect secondary growth phenomena induced by offshore development and to identify inconsistencies with State coastal zone management.	Subsec. 18(b) provides that certain resource statistics and anticipated extent and rate of development be included in an EIS for the Leasing Program authorized by Sec. 18.	NEPA implicitly requires, and the CEQ guidelines reflect, that socio-economic factors be considered in the EIS. Subsec. 21(c) of S. 426 explicitly requires that factors which may effect onshore growth be considered. Provisions in Subsec. 18(b) of S. 521 require the inclusion of certain resource-related data but is not as comprehensive as S. 426.

ELEMENT	S. 426	S. 521	COMMENTS
i.monitoring Studies	Subsec. 21(d) requires NOAA to conduct monitoring studies after leasing and development to detect changes in the environment as are- suit of oil and gas development.	Sub: ec. 30(1.) requires con- timed post-leasing monitoring similar to Subsec. 21(d) of S. -26.	Post-leasing environmental monitoring is minimal under the present administrative procedure. Both S. 521 and S. 426 provide for contiguous monitoring after leasing and development in order to detect adverse environmental effect caused by OCS operations.
Adjacent Coastal States	Subsec. 21.(f) provides pro- cedures for the Administrator of NOAA to designate "adjacent coastal States" based on the po- tential impact which may be re- ceived as a result of the pro- posed action for the purpose of comments and petitions for post- ponement in Sec. 20.	"*Adjacent State" is not defined explicitly.	S. 521 does not supply a definition for "adjacent coastal State". **S. 426 provides a definition** and process for designating "adjacent coastal States" **on a basis other than mere** geographical proximlties and parallels, to a certain extent, the definition used In the Deepwater Ports Act.
Inspection and En- forcement of Safety Regulation			
Promulgation of Regulations	Subsec. 22(b) requires the Coast Guard to develop and pro- mulgate **safety** regulations for operations in the OCS baaed on the best available technology.	Subsec. 20(b) directs the Secretary to promulgate safety regulations within one year based on the best available technology.	S. 426 gives the authority and re- sponsibility for promulgating **and** enforcing safety regulations to the **coast Guard**. S. 521 retains a split responsibility for safety reg- ulation and enforcement.

LEMENT	S. 521	: COMMENTS
Enforcement of Regulations	Subsec. 23(a) designates the Coast Guard as responsible agency for enforcing the regulations promulgated under Subsec. 22(b). Annual inspections and periodic unannounced inspections are required.	Subsec. 22(a) provides for a joint enforcement effort by Interior andthe Coast Guard with inspection requirements similar to Subsec. 23(a) of S. 426.
Liability for Oilspills		
Reporting	Subsec. 26(a) requires that the person in charge of oil or gas operations must report spills to the Coast Guard upon having knowledge of the spill under penalty of $10 thousand for failure to do so. Criminal action against the reporting individual may not be based on the information given. Subsec. 23(a) also requires the Coast Guard to investigate all "major" oilspills.	Subsec. 23(a) requires similar disclosure as Subsec. 26(a) of S. 426 but levies no penalty for failure to report and requires only reporting to the "appropriate agency" implying either the Coast Guard or Interior. Similar to S. 426, the Coast Guard must investigate all "major" oilspills and issue a public report within 30 days.

EMENT			COMMENTS
Removal	Subsec. 26(b) directs the Coast Guard to initiate removal procedures unless it may be done adequately by the lessee. Costs incurred by the Coast Guard may be recovered from the "Offshore Oil Pollution Settlement Fund" established under Subsec. 26(c).	No Provision	In the event of an oil spill, quick mobilization and cleanup is necessary. S. 426 provides for the Coast Guard to initiate cleanup procedures similar to the provisions in the Deepwater Ports Act.
Strict Liability	Subsec. 26(c) establishes strict liability without regard to fault for any damage which may result to natural resources relied on for economic purpose or subsistence by a claimant from oil spilled by a lessee or permitee. The defenses of war, negligence of the Federal Government or of the claimant may be pled.	Subsec. 23(b) similar to S. 426, established strict liability for damage to natural resources relied on for economic purpose or subsistence by a claimant. The same defenses are available to a lessee.	Both S. 426 and S. 521 adopt the theory of strict liability for oil spills. No proof of negligence, causation or harm need be shown. Valid defenses are restricted to force major and negligence on the part of government or claimant.
Limits of Liability	Subsec. 26(c) limits recovery for a single incident to no more than $100 million, with the lessee assuming liability for the first $7 million, balance to be derived from the Settlement Fund. Evidence of financial ability is required (Subsec. 25(d).	Subsec. 23(b) provides identical limits to those of Subsec. 26(c) of S. 426.	

ELEMENT	S. 4.26	s. 521	COMMENTS
Fund	Subsec. ***26(c)*** establishes the "Offshore Oil Pollution Settlement Fund". Fund will be maintained by a 2 l/2 cent per barrel surcharge. Collections will cease when the Fund reaches $100 million and recommence when it depreciates to $85 million. The Fund may borrow from commercial lenders as required.	Subsecs. 23(b) and 23(d) contain identical provisions for the Fund as Subsecs. 26(c) and 26(d) of S. 426.	
Remedies and **prosecution**	Subsec. 24(a) directs the Attorney General or any U.S. Attorney of the jurisdiction to institute civil action against an alleged violator of any safety regulation at the request of the Coast Guard.	Subsec. 29(a) permits the Attorney General to exercise discretion in instituting cases to enforce provisions of the law at the request of the Secretary.	In some instances there has been a reluctance on the part of the Department of Justice-to *initiate* enforcement actions upon the application of other Federal agencies. The permissive language of Subsec. 29(a) of S. 521 would continue the direction of the Attorney General in undertaking enforcement litigation. Subsec. 24(a) of S. *426* would require the Attorney General to prosecute the case at the determination of the Coast Guard. U.S. **Attorneys would also** be given authority to prosecute at the jurisdictional level.

ELEMENTS	s. 426	S. 521	COMMENTS
Civil Penalties	Subsec. 24(b) establishes a fine for violation of regulations or orders at $50 thousand per day for each day of continued viola. tion. Subsec. 24(d) establishes a $100 thousand and/or one year imprisonment for willful violation of a rule regulation *or* order of for falsifyingor tampering with monitoring equipment -or information.	Subsec. 29(b) establishes a penality of $5 thousand for a violation as provided in Subsec. 24(b) of S. 426. Subsec. 29(c) **provides** the same penalties as set out in Subsec. 24(c) of S. *426.*	
Citizen Suits	Subsec. 25(a) permits any person adversely affected to commence a civil action on the basis of a violation of a regulation, permit license or lease. Action may be brought against a person, government or against the Secretary for perfomance of a non-discretionary **duty.** **Subsec.** 25(b) requires that notice be given to the Secretary and alleged offender to permit administrative remedies. Also, the Secretary may intervene in any action as a matter of right (Subsec. 25(c)). Costs may be awarded to any party at the discretion of the,court (Subsec. 25 (d)).	Subsec. **27(a) et seq.** permits the initiation of citizen suits similar to the provisions **of** Subsec. 25(a) et seq. of S. **426.**	**The citizen suits provisions of S. 426 and S. 521 incorporate the concept of citizen participation in the administrative procedure of Federal agencies. Limited authority to bring suits equivalent to** statutory mandamus for non-discretionary actions of the administrator and against violators in the absence **of** adequate enforcement is provided in a manner similar to the Federal Water Pollution Control Act **Amendments,** the Noise **Control Act of 1972 and the Deepwater Ports Act.**

ELEMENT	S. 426	s. 521	COMMENTS
Research and Development	Subsec. 27(a) directs the Coast Guard to conduct research and development to improve safety Of offshore operations where sufficient research is *not* being undertaken by other government or private agencies.	Subsec. 21(a) directs the Secreatry to conduct research and development to improve drilling technology, safety and monitoring of oil and gas operation on the OCS in the absence of on-going research.	S. 426 restricts the authorization to undertake research end development to *those* activities that would enhance safety of OCS operations. S. 521 permits **a** broader definition of research to include drilling devices and techniques.
Moratorium	Subsection 29(a) would terminate further leasing in all areas where there has been no prior leasing (Frontier **Areas) or where geological or environmental** make drilling hazardous. The moratorium would continue until the exploratory program was completed and Congress concurred by its silence with a Leasing end Development Plan as provided by Subsec. 29(b)).	No. Provision **conditions**	

ELEMENT	S. 426	S. 521	COMMENTS
Coastal Impact Fund	No provision	Subsec. 26(a) establishes "Coastal State Fund" under the custody of the Secretary to provide grants to the coastal States impacted by OCS oil or gas development. Subsec. 26(c) **provides for grants** to be non-matching, full-compensating grants to offset the social, economic or environmental impacts resulting from OCS operations. The Fund would be created by earmarking 10 percent of Federal OCS revenues or 40 cents per barrel whichever is greater (Subsec. ; 6(d)). An upper limit of ; 200 million per year is established and $100 million is authorized as a base for the Fund (Subsec. 26(e)).	S. 586 (Coastal Zone Environment Act of 1975) provides for a Coastal Impact Fund to be administered by the Department of Commerce to provide 100 percent grants to States which are likely to be impacted by any energy facility if the State is participation in the Coastal Zone Managment Act planning grant program. Grants under Sec. 308 of S. 586 could be used for planning, managing, or controlling economic, mental or social impacts, or for the construction of public facilities and services made necessary by the energy development activity The Fund would be created by appropriated money rather than earmarked funds from OCS revenue.
Strategic Reserves	**Sec. 304** requires a study to explore the feasibility of exchanging enshore naval petroleun reserves for offshore strategic reserves.	Subsec. '18(k) requires that area of the OCS be reserved as a "National Strategic Energy Reserve", and the Secretary is directed to study Means for de- ~ eloping and maintaining them : n the **national** interest.	

APPENDIX 3

AN ECONOMIC ANALYSIS OF ALTERNATIVE OUTER CONTINENTAL SHELF PETROLEUM LEASING POLICIES

Prepared for
THE OFFICE OF ENERGY R&D POLICY
National Science Foundation
September 1974

V. Exploration Externalities and Risk Reduction

The previous sections have *emphasized that* risk characterises and dominates many of the problems associated with OCS leasing policy. This section addresses why risk reduction through exploration tend. to be suboptimal under current leasing policy and investigates alternative approaches for minimizing this problem.

The federel government could more *efficiently* plan overal the scheduling of energy leases *if* the production potential of the OCS were better known. The development of environmental safeguard production constraints could be more easily planned if the type and likelihood of environmental hazards were known for unleased areas of the OCS. Petroleum firm could bid more competitively for petroleum leases if the uncertainties associated with drilling costs and payoff could be reduced. To the extent that risk can be reduced by the collection of information through exploration, the severity of these general problems and the need for complex leasing strategies are decreased.

While the GS performs basic geological research on the OCS, nearly all geological and geophysical exploration, which is Specifically directed toward petroleum discovery, is initiated and carried out by the petroleum industry. Unfortunately, due to the difficulty of maintaining proprietary rights to and hence control of information firms in a competitive system tend to invest suboptimally in and prefer to delay exploration. The returns to exploration are lower to an individual firm then to society because a firm is unable to capture all of the gains from exploration information. The firm that drills the first exploratory well in a new area of the OCS inadvertently provides

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1/ The GS is now contributing to the expenses and sharing raw data for many OCS exploration programs but is still taking little or no part in the initiation and direction of the exploration effort. In addition, the GS has insufficient funds to adequately process and interpret the data available.

some information for all firma on surrounding tracts. If the first firm could charge the others for this information it would invest optimally in exploration. But once the information is old to a second firm, the second firm cat pass it on to others at a reduced rate every firm hopes some other firm will be the second firm, and the first firm knows this, the initial sale is rare. In the meantime geological and discovery information is leaking to others through emloyees and subcontractors. An individual firm, knowing that it will not capture all of the gains from exploration, will invest in exploration until the incremental gains to the firm alone equal the incremental coat.

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costs of the exploratim drilling are uncertain. Confronted with these uncertainties, a risk averse firm will invest less in exploration than it would if its expected returns could be realized with certainty, the appropriate Criterion for a rick neutral society.

The problem is even more complex in that each firm is also uncertain as to when its neighboring firm will explore and provide information of external benefits for the firm. Such information can change the firm's own exploration plans and reduce its coats. Hence, each firm will tend to postpone exploration in order to increase the likelihood that it will benefit from exploration in surrounding areas. Hence firms will tend not only to underinvest but also to delay investing. Given the combination of uncertainties and the externality problem, industry exploration behavior has been difficult to predict. Clearly, the tendency to both underinvest in and delay exploration provides substantial justification for diligence requirements under the present leasing

system. The expending for tax purposes of exploration coat., especially geophysical and wildcat drilling costs, may also be justified by the existence of information externalities.

Directed efforts during the past few years toward a national energy policy have made clear the OCS exploration benefits more then the petroleum firm Involved on the OCS. Exploration reduces the uncertainty about the production potential of the OCS and thereby enables energy policy-makers to direct energy R&D and energy leasing programs more effectively. As uncertainty is reduced, diversity and flexibility in other energy technologies become less necessary, and real savings in research manpower, labor, and materiels can be attained.

From the petroleum lndustry's point of view, this reduction in the uncertainty of future energy supply amounts to a reduction in future price uncertainty. Such a reduction increases the efficiency of the industry and reduces the problem discussed in the previous section with respect to the divergence between the optimal private and social response to risk. In addition, enviromental management can be improved with better information. Currently, major leasing commitments are being made before sufficient information has been acquired to weigh material benefits against environmental costs. Industry exploration thus confers an external benefit on society as a whole. Since private firms receive no revenues for providing this service, they do not consider this external benefit in their exploration planning. This in turn provides an additional incentive to underinvest in exploration.

The current approach to OCS leasing leaves no opportunity for the federal government to increase exploratory activity-in order to reduce the range of estimates of OCS production potential--without simultaneously increasing production from the OCS soon after. Exploration is closely tied to development and production. While some geophysical exploration occurrs prior to

the announcemnet of the BLM's intention to lease an area several years in the future. most geophysical work occurs after such an announcement. Except for rare exceptions, exploratory drilling--the only way to discover if oil is really there--does not occur until after the lease sale. Diligence requirments force the lessee to initiate drilling within five years of the sale. If oil is discovered, the firm has a tremendous incentive to develop end extract the resource in order to start earning a return on its leases bonus end exploration capital. As a result, the BLM's announcement of intention to lease en area s timulates exploration because of the fire's interest in production profits. This link grows stronger as the firm sinks capital into geophysical exploration, lease bonus payments, exploratory wells end production platforms, development wells, and transport facilities.

Several changes in leasing policy have been advocated to decrease exploration externalities and reduce risk. These include (1) larger tracts, (2) large exploration leases with smeller development selection rights, (3)checkerboard leasing, (4) increased financial incentives to explore, end (5) contract exploration. Each of these proposals would presumably involve exploration stipulations, i.e., clauses in a contract between government end industry, which specify minimum exploration performance and reporting of findings, in order to improve performance. But the mature end relative importance of stipulations vary considerably between the Appropriation of each of these proposals and of some of their advantages and disadvantages follows.

1. Larger Tracts

The OCS Act limits tract size to a maximum of 5,760 acres, an area of 9 squnre miles. Lease tracts typically have been this maxima or 5,000 acres. occasionally, tracts of about one-half and one-fourth this sire have beam offered.

w

Larger tracts, perhaps in the 20-50 square mile range, would increase the probability that oil discovered by the leesee would largely be contained within its tract rather than on an adjoining lease. The likelihood that the lcasee would confer external benefits on a neighbor is reduced. The increased returns to exploration would induce increased investment and raduce delays in exploration.

A. Advantages

(1) Exploration would approach the private optimum as tract size Increases. This would lead to increased government revenues (but see B.2).

B. Disadvantages

(1) This approach, in itself, is insufficient to induce socially optimal exploration behevior, i.e., the provision of information which can assist energy and environmental policy-makers at the appropriate time

(2) As tract size increases, competition would decrease since smaller firms would not be able to meet the capital requirements necessary to explore end develop larger tracts. Joint bidding would become more common. Government revenues would tend to be less with less competition.

2. Large Exploration Leases with Development Selection Rights

several countries including Canada have leased tracts of hundreds or thousands of square miles for exploration and then allowed the leasee to sele a portion of this area for development. The remaining acreage with exploration information is relinquished to the government which then leases the land again

for further exploration and development selection or in smaller tract. directly for development. Typically, large firms, which are capable of bearing,risk and which have sufficient capital to carry out exploration, win the first round; they pay nominal sums to the government per acre explored and amounts per acre selected for development. In effect, the government pays for the initial broad exploration out of revenues it could have *received* from the first development tract if its existence had been known and it had been leesed directly.In subsequent lease sales on the relinquished tracts, medium and small firms compete. Government revenues per acre are higher because of the exploration information and *reduced risk*.

A. **Advantage**

b

(1) By leasing large acreages, broad-scale exploration, which could generate information suitable *for energy and environmental* policymakers, can be generated at am appropriate time.

(2) Except for the initial leasee's right to develop ● portion of the exploration lease, this approach separatea exploration from production.

(3) Competition and opportunities for smaller firma ● re increased in subsequent sales on relinquished tracts.

B. **Disadvantages**

(1) The approach depends on the existence of very large firma or joint ventures to undertake the first exploratory lease with development selection rights. Competition for and government revenues from this sale are thus likely to be low.

(2) Exploration stipulations are necessary to induce the initial lease to explore the entire tract optimally rather than follow a strategy which most efficiently determine

the best parcel for it to select for development. These stipulations will entail administrative end enforcement costs to the government.

(3) The initial lease bears the risk burden that the development parcel it selects will have insufficient production capacity to support storage and transport facilities and that the governmant will not lease additional acreage in the vicinity for many years in the future. This problem will tend to reduce total government revenues.

3. **Checkboard Leasing**

The government of Alberta has experimented with checkerboard leasing. In this approach every other tract is leased in en initial sale, and the remaining tracts are leased as information accumulates from the initial tracts.

A. **Advantages**

(1) Risk is reduced in subaequent lease sales leading to increased competition for and government revenues from these tracts.

(2) The area of the OCS, on which socially valuable information could be gathered, could effectively be doubled for a few years. Since exploration is still tied to development and production and optimal production cannot occur with "checkerboard development," this doubling effect cannot be extrapolated.

B. **Disadvantages**

(1) **Rink to initial lessees is greater** then with the currant **approach since the length of** delay before subsequent sale, **making development of a petroleum deposit possible, probably could not be specified by the government.**

(2) **Exploration stipulations would be essential since this approach assures that the initial leasee will confer external information benefits on his neighbors** but **not vice versa.**

(3) **Except for the small** effect **noted in .A(2), this approach does not open up possibilities** for exploration which would **substantially** assist energy *and* **environmental policy-makers.**

4. **Increased Financial Incentives** to Explore

Nearly **all exploration costs are** now **treated as** current expenses rather **than** as capital **investments for income tax purposes.** Exploration expensing can **be thought** of as an **existing subsidy to exploration.** Whether this tax **advantage is sufficient to induce the optium private level of** exploration **depends on the particular situation end the leasing strategy. Since researc and development expenditures on competing and potential energy technologie** are also expenaad, it is unclear whether exploration **expensing should be thought of as a subsldy to compensate for externalities. In any cue further "special" tax treatment--for example, exploration tax** credits--could be utilized to induce **exploration toward the private optium. Such an approach in itself appear. to be a poor way to encourage exploration which would be of value to energy and environmental policy-makers.**

Another approach would be for the GS substantially to increase its. level of participation in the broad "group shoot" geophysical exploration programs in new areas of the OCS now initiated by private firms end jointly financed by up to 20 companies. If GS fiinanced 50 percent rathar then its current level of about 5 percent of the costs of this geophyoical exploration, Induetry might be interested in exploring area in greater detail. This could provide policy-makers with somawhat. better information through more exploratory drilling is really what is needed. Induetry's interest in stepping up geophysical exploration would depend on how information was shared between government, participating firm, and the industry as a whole.

Clearly, other financial incentive schames to increase exploration can be envisaged includlng subsidy payments and federal purchasing of exploration information. These approached quickly make complex contractual and enforcement arrangements between industry and government. If high contractual and enforcement costs are acceptable, than contract exploration in which the government initiates exploration according to its needs appears to be a superior alternative.

5. Contract Exploration

Contract exploration is appropriately receiving increasing attention. In this approach the government would contract with and pay "the Lowest bidder" for OCS exploration work. The area to be explored, level of exploration, collection of enviromental information, and time period would be stipulated in a contract. Exploration firms and petroleum companies would submit bids. The government would award the contract to the firm with the lowest bid among those firms who "qualified." This approach represents a complete separation between exploration and development.

A. Advantages

(1) Government would have the greatest ability to direct exploration in those areas and in a manner most suitable to energy end environmental policy needs and thereby improve subsequent decisions on energy R&D and leasing over time.

(2) Risk in subsequent lease sales could be reduced to almost any level desired by more intensive exploration, thereby Increasing competition and government revenues and substantially reducing the need for complex rick sharing leasing strategies on development leases.

(3) Environmental data collection could be more easily integrated in this approach than in the next best alternative.

B. Disadvantages

(1) Exploration costs, especially exploratory drilling costs, are highly variable. In the process of exploring, information is acquired which suggests how further exploretion should be carried out. Optimum expioration cannot be specified in advance. If bidding were on afixed cost basis, the bidder would confront tremendous risks or explore suboptimally. The winner of a cost plus bid is not necessarlly the wet *efficient*. *Mixed* bidding *schemes* would be costly to administer. Negotiated leases increase the possibilities for favoritism and corruption.

(2) In the absence of *profit-maximizing signals,* nay ml fight exploration dimensions of importance to petroleum production as contrasted with those which assist energy policy making. This would result in a loss of revenues from development leasing, but this lees would not necessarily change exploration contractual terms.

Summary and Recommendations

Risk, and thereby many problem of OCS leasing, can be reduced through the collection end utilization of more information on the petroleum production potential of the OCS. In addition, overall energy end environmetal policy can be subetantially improved with better information. Unfortunately, information is difficult to "own," difficult to define, and the costs of acquiring the "appropriate amount" cannot be assessed in advance. These characteristics are Inherent. They do not appear to stem from or be associated with other factors which can be varied through leasing policy. Yet, given informtion needs, one strategy seem to interface with these characteristics better than others. Contract exploration produces the desired public benefits from infromation directly. Its disadvantages are great and obvious, simply because the inherent characteristics of information are confronted directly. Other approaches obscure the Inherent problem through circumention. Inefficiencies, resulting form indirect or a poor interface, have been noted. In the analysis no situations have arisen in which the inherent problem has been alleviated by complex strategies. Serious consideration should thereforc be given to contract exploration, perhaps even direct government exploration, *for* the purposes *of* better assessing the resource potential of the OCS and of identifying those which it would be desirable to encourage more intensive exploration by industry leading to development and production.

APPENDIX 4

THE OCS PETROLEUM PIE

by

J. W. Devanney, III

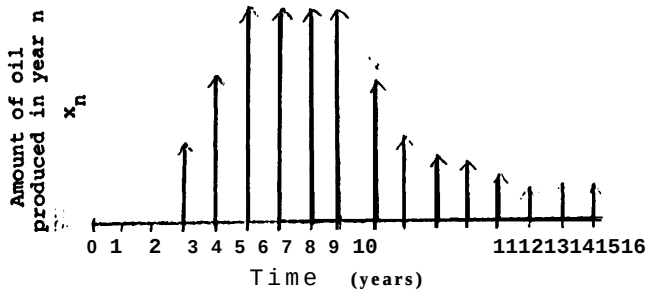
Report Number MIT SG 7510

February 28, 1975

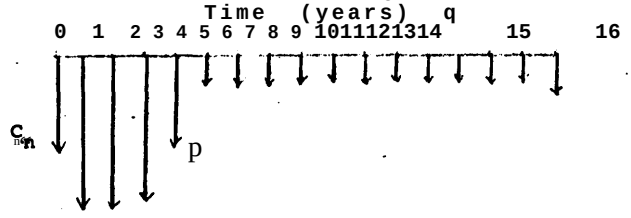
51-5420-75-7

1.4 The Unit Resource Cost of OCS Oil

Often it is convenient to place our present value calculations on a unit (per barrel) basis. Suppose that *in* order to produce and land the following time stream of oil from an offshore-find



will require the nation to invest resources in each year whose cost in national income--the market value of what these resources could produce elsewhere--is C_n. That is, our investment time stream might look like:



The present value of these costs is

$$\sum \frac{C_n}{(1+i)^n}$$

Since In this analysis our black box is the nation, we want to include in these costs only those financial transactions, those expenses, which represent actual diversion of resources to the offshore development. For example, the C_n would not include any payments to public bodies such as taxes, bonus bids, or royalties, which represent transfers of national income rather than diversion of resources. In order to put these costs on a unit basis we ask ourselves, what per-barrel price, c, would result in present valued revenues equal to these present valued, i.e.,

$$\sum_{n=0}^{N} \frac{c \times X_n}{(1+i)^n} = \sum_{n=0}^{N} \frac{C_n}{(1+i)^n}$$

where N is the life of the field. This is the break-even price on the development from the point of view of the nation; i.e. if oil can be landed from alternative sources, say, by importation at a cost of c, we will just break even in terms of national income by producing this offshore oil. If the cost to the nation of alternative sources is higher than c, then national *income* will be increased by the difference between this cost and c on a unit basis. If the cost to the nation of oil from alternative sources is less than c, then national income will be decreased by the difference. In this case, the resources required to produce the oil would be more profitably employed elsewhere.

We will call c the unit resource cost of OCS oil. Notice included in c is a normal return to capital. That is, if our development is privately financed at price c the developers will be earning an interest i on their investment.

1.5 Economic Rent and Excess Profits

It has sometimes been alleged that in the absence of bonus bids, royalties, etc., the savings associated with domestic offshore oil would be passed on to the consumer in the form of lower prices. In this case, the increases in real national income would automatically accrue to the public. If this were the case, then one could make an argument for such simple OCS management policies as claim staking, both from the point of view of national income and public income.

However, in the absence of direct price regulation, this simply will not happen. Even assuming pure competition among the OCS leaseholders (homesteaders if you like), the landed price of OCS oil will not drop below the landed price of OPEC oil unless there is enough domestic production to push all foreign oil off the U.S. market--an extremely unlikely event.*

The reason is simple. Assuming competition, landed price of this oil will be determined by supply and demand. The supply curve of crude to the United States looks something like Figure 1.2. On the left-hand side of the curve is the domestic supply as a function of its unit resource cost to the nation. As we shall see, some of this oil can be quite cheap. The horizontal portion of the curve on the right represents imported crude. The reason why this portion of the curve is essentially horizontal is that the cartel of exporting countries,

*Or direct price control.

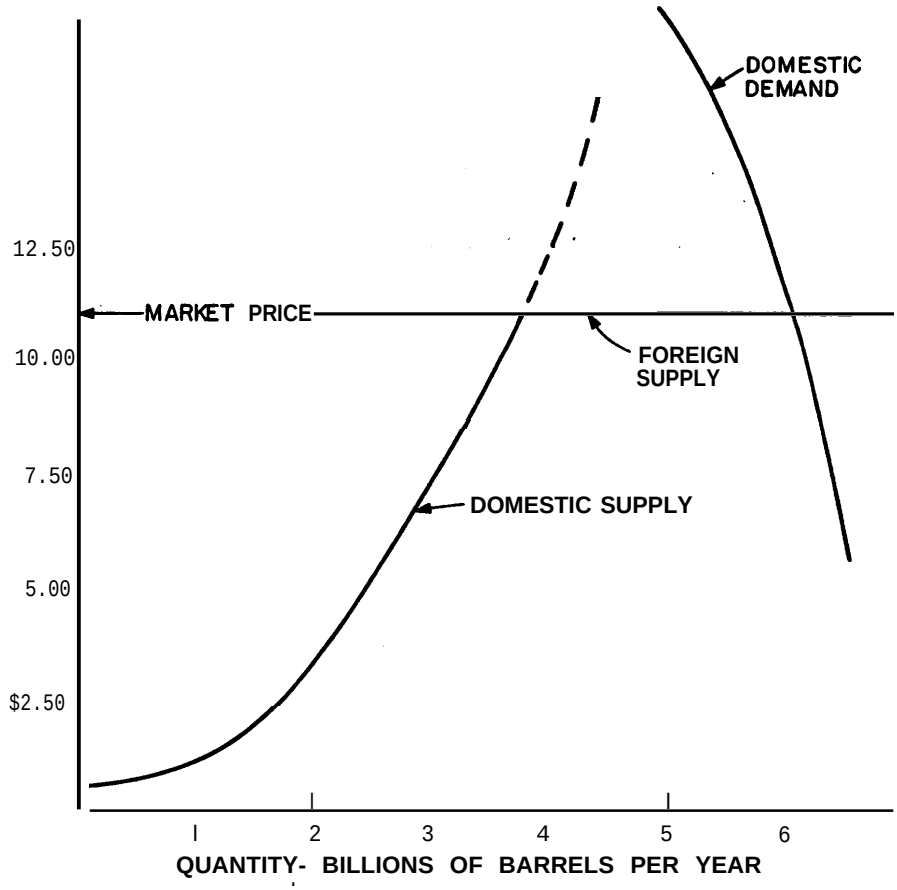


FIGURE 1.2 SKETCH OF U.S. OIL SUPPLY/ DEMAND

under OPEC leadership, attempt to adjust their prices so that from the U.S. point of view it is as expensive to import from one source as from another. Essentially, once you meet the OPEC price you can buy as much oil at that price as you want.*

At present, the U.S. is importing some 2.25 billion barrels per year, about 38% of consumption. Unless domestic production increases to force all this oil off the market, demand curve will intersect the supply curve on the horizontal portion of the supply curve. The vertical level of intersection will determine the domestic price of crude. Regulation aside, no domestic producer will sell his oil for less than the landed price of foreign crude, for he knows that there are domestic buyers who are paying this price to whom he can sell his oil.

Given this situation, let's consider what will happen if we make a large find on the OCS. As we shall see, the landed resource cost of such oil can easily be less than $2.00. The effect of such a find on the supply curve of domestic oil is sketched in Figure 1.3.

As shown, the find is equivalent to a rightward shift of the supply curve at the unit resource cost of landing this find--$2.50 per barrel in the sketch. The

*This is not true during actual embargoes. From time to time the exporter cartel may call an embargo to raise the overall level of the horizontal portion of the curve. However, it is in the interest of the cartel to keep these embargoes relatively short; as soon as the price rise has been effected, the embargo is lifted and once again one can purchase as much as one wants at the new price.

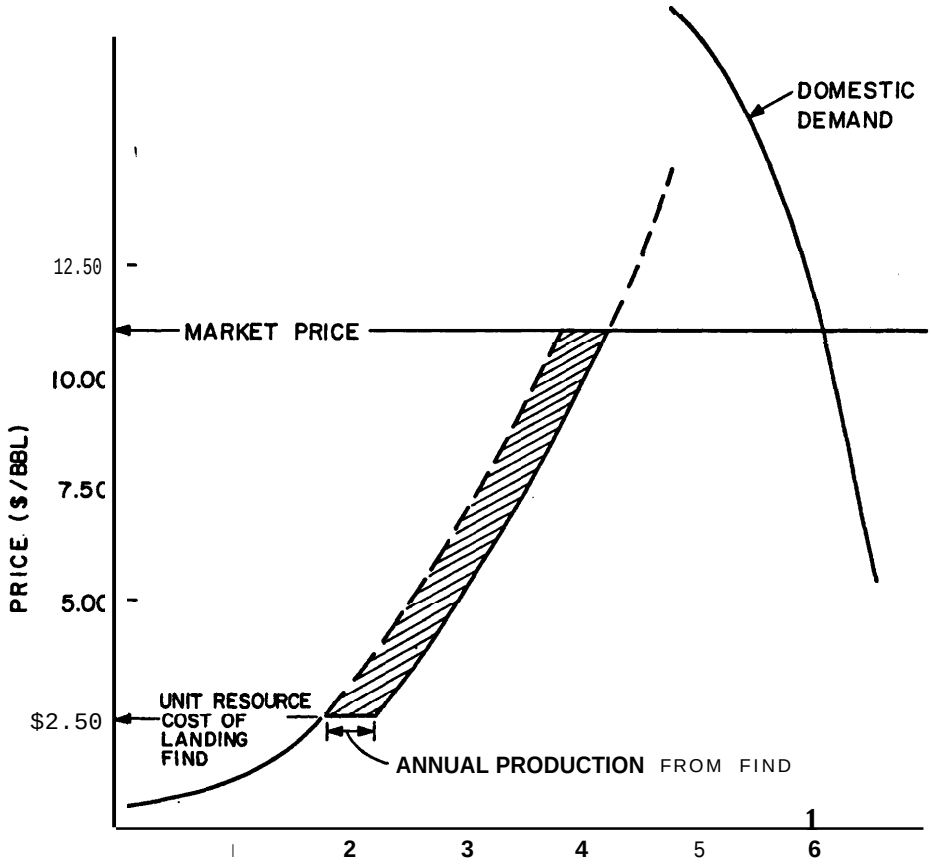


FIGURE 1.3 SKETCH OF U.S. OIL SUPPLY AND DEMAND WITH LARGE NEW FIND

amount of the shift is equal to the annual production from the find. Note that unless the amount of the shift is sufficient to push all foreign oil off the domestic market, there will be no change in price, for the intersection of the demand curve and supply curve is still at the same vertical level. Under competition, market price will not be affected by individual find unless the aggregate of such finds pushes all foreign oil off the U.S. market. To the extent that the relevant markets are not completely competitive, this statement holds a fortiori.

The fact that price is not affected does not mean that there has been no increase in national income. In fact, the annual increase in national income associated with the hypothetical find sketched in Figure 1.3 is the hatched area in the figure.This is the difference between the unit cost to the nation of imported crude and the unit resource cost of the OCS find multiplied by the amount of the find. In this case, we are replacing $11.00 foreign crude with $2.50 domestic crude for a net gain in national income of $8.50 per barrel.

The hatched area, the gravy if you like, is known as the economic rent associated with the find. Where, then, will this increase in national income, this economic rent, show up? It will be split between the public and the investors in the development. The former will see lease payments, royalties and income taxes which would not occur if the resource were not developed. The latter will see

profits in excess of what he would have achieved without the development. Notice that here we are using the word profits in a very restricted sense to imply profits above and beyond the normal return to capital which the investor could earn elsewhere, for this normal return to capital has been included in the unit resource cost by the present valuing process. To emphasize this usage we will use the term 'excess profits" to describe these increases in developer income. Excess profits is not used in a pejorative sense. It is a technical term meaning profits greater than the normal return to capital.

The actual split between the public and the developer will, of course, depend on the OCS management policy being employed. On the one extreme, simple homesteading and no income taxes, the entire increase in national income, all the economic rent would go to the developer in the form of excess profits. On the other extreme are systems in which the developer is forced to bid away all the excess profits in the form of lease payments, royalties and taxes in which case all the economic rent would accrue to the public. This split, the cutting of the pie, will be one of the central issues in our discussion of alternative leasing policies.

ATTACHMENTS

Attachent A.	OCS Lands Act of 1953 and code of Federal Regulations
Attachment B.	**Department of the Interior OCS Orders** 1 thru 12
Attachment C.	**Analysis of S. 521 and S. 426** ~~Relate to S. 3221 of the 93rd Congress~~
Attachment D.	**Analysis of S. 740, "The National Energy Production Board Act of 1975"**
Attachment E.	**Oil and Gas from the Outer Continental Shelf: Analysis of the "Energy Supply Act" and Summary of the Senate Debate on S. 3221**
Attachment F.	**An Analysis of the Department of the Interior's Proposed Acceleration of Development of Oil and Gas on the Outer Continental Shelf**
Attachment G.	Letters Requesting OTA Study

Attachment A.

OCS Lands Act of 1953 and Code of Federal Regulations

REGULATIONS PERTAINING TO MINERAL LEASING ON THE OUTER CONTINENTAL SHELF as contained in TITLE 43 of the CODE of FEDERAL REGULATIONS

Group 3300- Outer Continental Shelf Leasing

PART 3300- OUTER CONTINENTAL SHELF LEASING; GENERAL

Subport 3300 Outer Continental Shelf Mineral Deposits: General

Sec.
3300.0-3 Purpose and authority.
3300.0-4 Applicability of public fend laws.
3300.1 Persons qualified to hold leases.
3300.3 Helium.
3300.4 payments of filing charges, bonuses, rentals and royalties.

Subport 3301 – Leasing Areas

3301.1 Leasing maps.
3301.2 Resources evaluation.
3301.3 Nominations of tracts.
3301.4 Selection of tracts.
3301.5 Notice of lease offer.
3301.6 Tracts subject to drainege.

Subport 3302 – Issuance of Leases

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3302.2 Term.
3302.4 Whet must accompany any bide.
3302.5 Award of lease.
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Subport 3303 – Rentals and Royalties

3303.1 Rentals.
3303.2 Royalties,
3303.3 Minimum royalty.
3303.5 Effect of suspensions on royalty and rental.

Subport 3304 – Bonds

3304.1 Amount of bond required of lessee.
3304.2 Form of bond.

Subport 3305 – Assignments or Transfers

3305.1 Assignment of leases or interests therein.
3305.2 Requirements for filing of transfers.
3305.3 Separate assignments required for transfer of record title to leases.
3805.4 Effect of assignment of particular tract.

Subport 3306s - Extension of Leases

3305a.1 Extension of leases by drilling or wall reworking operations.
3305a.2 Directional drilling
3305a.3 Compensatory payments.
Sec.
3305a.4 Effect of suspension on lease term.

Subport 3306 -Termination of Leases

3306.1 Relinquishment of leases or parts of leases,
3306.2 Cancellation of leases.

Subport 3307- Mineral Deposits Affected by Section e of outer Continental Shelf Lands Act

3307.1 Effect of regulations on provisions of lease.
3307.2 Leases of other minerals.
3307.3 Obligations of Leases.
3307.3-1 Bonds.
3307.3-2 Wells.
3307.3-3 inspection.
3307.3-4 Diligence; compliance with regulations and orders.
3307.3-5 Freedom of purchase.
3307.3-6 Removal of property on termination of lease.
3307.4 Exploration and operations.
3307.4-1 purchase of production.
3307.4-2 Suspension of operations during war or national emergency.
3307.4-3 Restriction of exploration and Opeerations
3307.4-4 Geological and geophysical expioration; rights-of-way.
3307.4-5 Leases of sulphur and other mineral.
3307.5 Remedies in cue of default.
3307.6 Heirs and successors in interest.

SUBPART 3300- OUTER CONTINENTAL SHELF MINERAL DEPOSITS; GENERAL

#3300.w Purpose and authority.

The Outer Continental Shelf Lands Act of August 7, 1953 (67 Stat. 462; 43 U.S.C. Q1331 et seq.). referred to in this part as "the act," among other things, authorizes the Secretary of the Interior to issue on a competitive basis leases for oil and gas, sulphur, and other minerals in submerged lands of the Outer Continental Shelf, as defined in section 2 of the act. Subject to the supervisory authority of the Secretary, the regulations in this pert shall be administered by the Director, Bureau of Land Management, hereinafter refereed to in this part as the Director.

$3300.04 Applicability of publoc land laws.

Thw laws and regulations pertaining to the public lands of the United States are not applicable to the submerged lands of the Outer Continental Shelf. Mineral deposits in the submerged lends of the Outer Continental Shalf are subject to disposition only in accordance with the provisions of the act and the regulations promulgated by the Secretary thereunder.

§3300.1 Persons qualified to hold leases.

Mineral leases issued pursuant to section 8 of the act may be held only by citizens of the United States over 21 years of age, associations of such citizens, States, political subdivisions of a State, or private, public, or municipal corporations organized under the laws of the United States or of any State or Territory thereof.

§3300.3 Helium.

Each lease issued or continued under the act shall be subject to a reservation by the United States of the ownership of and the right to extract helium from all gas produced from the leased area, subject to such rules and regulations as shall be prescribed by the Secretary of the Interior. In case the United States elects to take the helium, the lessee shall deliver all gas containing helium, or the portion of gas desired, to the United States at any point on the leased area in the manner required by the United States, for the extraction of helium in such plant or reduction works for that purpose as the United States may provide, whereupon the residue shall be returned to the lessee with no substantial delay in the delivery of gas produced from the well to the purchaser thereof. The lessee shall not suffer a diminution of value of the gas from which the helium has been extracted, or loss otherwise, for which he is not reasonably compensated, save for the value of the helium extracted. The United States shall have the right to erect, maintain, and operate on the leased area any and all reduction works and other equipment necessary for the extraction of helium.

§3300.4 Payments of filing charges, bonuses, rentals and royalties.

All payments to the United States required by the act or the regulations in this part shall be made to the oil and gas supervisor of the Geological Survey for the region in which the leased area is situated, except that payments of filing charges, bonuses and first year's rental shall be made to the manager of the appropriate field office, Bureau of Land Management, unless otherwise directed by the Secretary. All payments should be made by check, bank draft, or money order payable to the United States Geological Survey, if the payments are made to the Geological Survey, or to the Bureau of Land Management, if the payments are made to that Bureau.

Subpart 3301 — Leasing Areas

§3301.1 Leasing maps.

(a) Any area of the Outer Continental Shelf which has been appropriately platted as provided in paragraph (b) of this section is subject to lease for any mineral not included in a subsisting lease issued under the act or meeting the requirements of subsection (a) of section 6 of the act, unless before any lease is offered or issued the unit is (1) withdrawn from disposition pursuant to section 12(a) of the act, or (2) designated as an area or part of an area restricted from operation under section 12(d) of the act.

(b) As the need arises, the Bureau of Land Management will prepare official leasing maps of areas of the Outer Continental Shelf, which will be made to conform so far as practicable to the method of tract designation established by the adjoining State. The area included in each mineral lease shall be described in accordance with the official leasing map.

§3301.2 Resources evaluation.

From time to time the Director may announce tentative schedules of lease sales of Outer Continental Shelf areas. At such time as an area is initially considered for mineral leasing, or as the need arises, the Director shall request the Geological Survey to prepare a summary report describing the general geology and potential mineral resources of the area and shall request other interested Federal agencies to prepare reports describing to the extent known any other valuable resources contained within the general area and the potential effect of mineral operations upon the resources or upon the total environment.

§3301.3 Nominations of tracts.

In selecting tracts for oil and gas, sulphur, or other mineral leasing, the Director will receive and consider nominations of tracts or requests describing areas and expressing an interest in leasing of minerals, or, from time to time, upon his own motion, upon approval of the Secretary, may issue calls for nominations of tracts for the leasing of minerals in specified areas. Nominations of tracts should be addressed to the Director, with copies to the appropriate Bureau of Land Management field office and the appropriate oil and gas supervisor of the Geological Survey. The Director, Geological Survey, shall submit recommendations to the Director on tract selections and lease terms and conditions.

§3301.4 Selection of tracts.

The Director, prior to the final selection of tracts for leasing, either selected on his own motion or nominated pursuant to §3301.3 of this subpart, shall evaluate fully the potential effect of the leasing program on the total environment, aquatic resources, aesthetics, recreation, and other resources in the entire area during exploration, development and operational phases. To aid him in his evaluation and determinations he shall request and consider the views and recommendations of appropriate Federal agencies, may hold public hearings after appropriate notice, and may consult with State agencies, organizations, industries,

and individuals. The Director shall develop special leasing stipulations and conditions when necessary to protect the environment and all other resources, and such special stipulations and conditions shall be contained in the proposed notice of lease offer. The proposed notice of lease offer, together with all views and recommendations received and the Director's findings or actions thereon, shall be submitted to the Secretary for final approval.

§3301.5 Notice of lease offer.

Upon approval of the Secretary, the Director shall publish the notice of lease offer at the expense of the United States in the *Federal Register*, as the official publication, and in other publications as may be desirable. The publication in the *Federal Register* shall be at least 30 days prior to the date of the sale. The notice shall state the place and time at which bids will be filed, and the place, date, and hour at which bids will be opened. The notice shall contain any special stipulations or conditions which will become a part of any lease issued pursuant to such notice, including stipulations or conditions for the protection of the environment, aquatic life and other resources.

§3301.6 Tracts subject to drainage.

Upon direction of the Secretary, the Director, after obtaining the recommendation of the Director, Geological Survey, is authorized to publish on his own motion notices of lease offer of tracts which have been determined by the Director, Geological Survey, to be subject to drainage of their oil and gas deposits from wells on other tracts. The Director may request and consider the views and recommendations of appropriate Federal and State agencies prior to publishing the notice of lease offer. The notice shall be published in accordance with section 3301.5 of this subpart.

Subpart 3302 — Issuance of Leases

§3302.1 General.

Tracts will be offered for lease by competitive sealed bidding under conditions specified in the notice of lease offer. Each oil and gas lease issued pursuant to section 8 of the act shall cover a compact area not exceeding 5,760 acres.

§3302.2 Term.

(a) All oil and gas leases shall be issued for a term of 5 years and so long thereafter as oil or gas may be produced from the leasehold in paying quantities, or drilling or well reworking operations, as approved by the Secretary under §3305a.1 of this part, are conducted thereon.

(b) All sulphur leases shall be issued for a term of 10 years and so long thereafter as sulphur may be produced from the leasehold in paying quantities or drilling, well reworking, plant construction, or other operations for the production of sulphur, as approved by the Secretary, are conducted thereon.

(c) Other mineral leases shall be issued for such terms as may be prescribed at the time of offering the leases in the notice of lease offer.

§3302.4 What must accompany bids.

(a) A separate bid must be submitted for each lease unit described in the notice of lease offer. A bid may not be submitted for less than an entire unit. Each bidder must submit with his bid a certified or cashier's check or bank draft on a solvent bank, or a money order or cash, for one-fifth of the amount of the cash bonus. If the bidder is an individual, he must submit with his bid a statement of his citizenship. If the bidder is an association (including a partnership), the bid shall be accompanied also by a certified copy of the articles of association or appropriate reference to the record of the Bureau of Land Management in which such a copy has already been filed, with a statement as to any subsequent amendments. If the bidder is a corporation, the following additional information shall be submitted with the bid.

(1) A certified copy of the articles of incorporation and a copy either of the minutes of the meeting of the board of directors or of the by-laws indicating that the person signing the bid has authority to do so, or, in lieu of such a copy, a certificate by the secretary or the assistant secretary of the corporation to that effect, over the corporate seal or appropriate reference to the record of the Bureau of Land Management in connection with which such articles and authority have been previously furnished.

(b) All bidders are warned against violation of the provisions of Title 18 U.S.C. section 1860, prohibiting unlawful combination or intimidation of bidders.

§3302.5 Award of lease.

Sealed bids received in response to the notice of lease offer shall be opened at the place, date and hour specified in the notice. The opening of bids is for the sole purpose of publicly announcing and recording the bids received and no bids will be accepted or rejected at that time. In accordance with section 8 of the act, leases will be awarded only to the highest responsible qualified bidder. The United States reserves the right and discretion to reject any and all bids received for any tract, regardless of the amount offered. Awards of leases will be made only by written notice from the authorized officer. Such notices shall transmit the lease forms for execution. In the event the highest bids are tie bids, tie bidders may file with the Director within 15 days after notification an agreement to accept the lease jointly, otherwise all bids will be rejected. If the authorized officer fails to accept the highest bid for a

lease within 30 days after the date on which the bids are opened, all bids for such lease will be considered rejected. Notice of his action will be transmitted promptly to the several bidders. If the lease is awarded, three copies of the lease will be sent to the successful bidder and he will be required not later than the 15th day after his receipt thereof, or the 30th day after the date of the sale, whichever is later, to execute them, pay the first year's rental, the balance of the bonus bid, and file a bond as required in §3304.1. Deposits on rejected bids will be returned. If the successful bidder fails to execute the lease or otherwise comply with the applicable regulations, his deposit will be forfeited and disposed of as other receipts under the act. If before the lease is executed on behalf of the United States the land is withdrawn or restricted from leasing, all payments made by the bidder will be refunded. If the awarded lease is executed by an agent acting in behalf of the bidder, the lease must be accompanied by evidence that the bidder authorized the agent to execute the lease. When the three copies of the lease are executed by the successful bidder and returned to the authorized officer, the lease will be executed on behalf of the United States, and one fully executed copy will be mailed to the successful bidder.

§3302.6 Form.

Oil and gas leases and leases for sulphur will be issued on forms approved by the Director. Other mineral leases will be issued on such forms as may be prescribed by the Secretary.

§3302.7 Dating of leases.

All leases issued under the regulations in this part will be dated and become effective as of the first day of the month following the date the leases are signed on behalf of the lessor, except that, when prior written request is made, a lease may be dated and become effective as of the first day of the month within which it is so signed.

Subpart 3303 — Rentals and Royalties

§3303.1 Rentals.

An annual rental shall be due and payable in advance on the first day of each lease year prior to discovery at the rate specified in the lease. The owner of any lease created by the assignment of a portion of a producing lease and on which assigned portion there is no discovery shall be required to pay an annual rental for such assigned portion at the rate per acre specified in the lease payable each lease year following the year in which the assignment became effective and prior to a discovery on such segregated portion.

§3303.2 Royalties.

Royalties shall be at the rate specified in the lease but in no event shall the royalty on oil and gas be less than 12 1/2 percent of the amount or value of the production saved, removed or sold from the lease, nor on sulphur less than 5 percent of the gross production or value of the sulphur at the wellhead.

§3303.3 Minimum royalty.

Each lessee shall pay the minimum royalty specified in the lease at the end of each lease year beginning with the first lease year following a discovery on the lease.

§3303.5 Effect of suspensions on royalty and rental.

(a) In the event that under the provisions of 30 CFR 250.12(c) or (d)(1) the regional oil and gas supervisor of the Geological Survey with respect to any lease directs the suspension of both operations and production, or with respect to a lease on which there is no producible well directs the suspension of operations, no payment of rental or minimum royalty will be required for or during the period of the suspension. In the event that under the provisions of 30 CFR 250.12(d)(1) the supervisor approves, at the request of a lessee, the suspension of operations or production, or both, or under the provisions of 30 CFR 250.12(d)(3) suspends any operation including production, the lessee will not be relieved of the obligation to pay rental, minimum royalty or royalty for or during the period of suspension.

(b) In the event the anniversary date of a lease falls within a period of suspension for which no rental or minimum royalty payments are required under paragraph (a), of this section, the prorated rentals or minimum royalties, if any are due and payable as of the date the suspension period terminates, shall be computed and notice thereof given the lessee. Payment of the amount due shall be made by the lessee within 30 days after receipt of such notice. The anniversary date of a lease will not change by reason of any period of lease suspension or rental or royalty relief resulting therefrom.

Subpart 3304 — Bonds

§3304.1 Amount of bond required of lessee.

The successful bidder prior to the issuance of an oil and gas or sulphur lease must furnish a corporate surety bond in the sum of $50,000 conditioned on compliance with all of the terms of the lease, unless he already maintains or furnishes a bond in the sum of $300,000 conditioned on compliance with the terms of oil and gas and sulphur leases held by him on the Outer Continental Shelf in the (a) Gulf of Mexico, (b) along the Pacific Coast, or (c) along the Atlantic Coast, as may be appropriate. An operator's bond in the same amount may be substituted at any time for the lessee's bond. The United States reserves the right to require additional security in the form of a

Director.

Subpart 3305- Assignment or Transfers

§3305.1 Assignment of leases or interest therein.

Leases, or ● ny undivided interest therein, may be assigned in whole or as to any officially designated subdivision subject to the approval of the ● uthorized officer, to any one qualified under §3300.1 to take ● nd hold ● lease. Any assignment made under this section shall, upon approval, be deemed to be effective on and after the first day of the lease month following Its filing in the appropriate office of the Bureau of Land Management, unless ● t the request of the parties an earlier data is specified in the Director's approval. The assignor shell be liable for all obligations under the lease accruing prior to the ● pproval of the assignment.

§3305.2 Requirements for filing of transfers.

(a)(l) All instruments of transfer of ● lease or of en interest therein, including operating ● greamenta, subleases, and assignments of record interests, must be filed in triplicate for approval within 90 deya from the date of final execution with ● statement over the transferee'a own signature with respect to citizenship and qualifications similar to that required of ● lessee

and retained portions become segregated into separate cnd distinct leases. The assignee becomes a lasses of the Government es to the segregated tract and is bound by the terms of the lease u though he had obtained the leeae from the United States in his own oema, end the ezsignment after ita approval WJU be the basis of a new record. Royafty, minimum royalty', and rentaf provisions of the original lease shell apply ~*IY to eecb mgmgated portion.

(b) In the -e of an assignment of a portion of an 011 and gas lease the segregated leases shall continue in fd force and effect for the primary term of the wiginaf lease and so long thereafter es oil or gas may be produced from the original leased mea in paying quantities or drUling or well reworking operation es approved by the Secretary are conducted thereon.

&bpart 330Sa - Extension of Leases

@30!5&i&xtjn~wo~rrasas by drilling or wetf

(a) The Secretary ahaff be deemed to have approved, within the meaning of section tUb)(2) of the Outer Continental Shelf Lends Act, drilling or weU reworking operatiom, conducted on the teased area in the foflowing instances:

(1) If, any discovery of oil or gee in paying quantities has been rrmde on the leasehold, and within 90 deya prior to expiration of the 5-year term or any extension thereof, or thereafter, the production thereof ehaU cease at any time, or from time to time, from any cause and production is restored or drilling or well reworlrhtg operations are commenced within 90 days thereafter, and such drilling or well reworkjng oparatbna (whether on the same or different wells) are prosecuted diligently until production is restored in paying quantities.

(9) If, within 90 days prior to expiration of the S-year term or any extension thereof, or thereafter, at any time, or from time to time, lessee is engaged in drilling or well reworking operations and there is no well on the leasehold capable of producing in paying quantities and the lessee diligently prosecutes auch operations (whether on the same or different wclta) with no cessation of more than 90 4a.

(b) The Secretary may approve such other ~tiom for drilling or reworking upon appficatioa of leasee.

(c) Nothing in this section obviates the necessity of obtaining the Oil and Gas Supewisor'sl approval of a pfan or notice of intention to drill or of complying witb the provisions of 30 CFR Part 250.

~3305a.2 Directional dri!lhtg.

A lease may be maintained in force by directional welts drilled under the leased area from surface locations on adjacent or adjoining land not covered by the lease. In such circumstances, drilling shall be considered to have commenced on the leased area when drilling is commenced on the adjacent or adjoining fend for the purpose of directionally drilling under the leased area through any directional weU surfaced on adjacent or djoining land, and production, dritling, or reworking of any such directionef well shall be considered production or driUing or reworking opemtions (es tha case mey be) on the leased area for all purposes of the lease.

~3305a.3 Compenseto~ peynnmts.

In the event that an oil and gas le-e makes aompematory peymenta as provided in 30 CFR 250.33 and in the event that the lease is not being maintained in force by other production of oil or gas in paying quantities or by other approved drilling or reworking opemtiooa, such payments shall be considered as the quivelent of production in paying quantities for afl purposes of the lease.

~3305a4 Effect of suspensions on feasa term

In the event that under the provisions of 30 CFR 2S0.12(C) or (d)(l), the regional Oil snd Gaa Superv"bor of the Orological Survey directs the mrapeneion of either operationa or production, or both, with mzpact to any lease, the term of the lease wiU be extended by a period quivalent to the period of the Suepermion. In the event that under the proviziom of 30 CFR 250.12(c) or (d)(l), the supervisor approves the suspension of either opemtiona or productio~ or both, with respect to any lease, the term of the feaae will not be deemed to expire so long es the suspension remains in effect.

$trbpart 330S - Termhtatiort of Leama

~33@.1 Relinquishment of Ieaaas or parts of Iecses.

Any lessee may at any time relinquish his entire interest in any officially designated hea ldvtaion thereof may be surrendered by the record title holder by filing a written relinquishment, in triplicate, with the appropriate office of the Bureau of Lend Management. A relinquishment shall take effact on the date it Is filed subject to the continued obligation of the Ieawe and his surety to make payment of all accrued rentals and royeftiea and to abandon all wells on the lend to be relinquished to the satisfaction of the Oil and Gas Supervisor.

~330S.2 Cancellation of leases.

Any nonproduchg lease issued under the act may be canceled by the authorized officer whenever the

lessee fails to comply with any provision of the act or lease or applicable regulations in force and effect on the date of the issuance of the lease, if such failure to comply continues for 30 days after mailing of notice by registered letter to the lease owner at his record post office address. Any such cancellation is subject to judicial review as provided in section 8(j) of the act upon the complaint of any person. Producing leases issued under the act may be canceled for such failure only by judicial proceedings in the manner prescribed in section 5(b)(2) of the act. Any lease issued under the act, whether producing or not, will be canceled by the authorized officer upon proof that it was obtained by fraud or misrepresentation, and after notice and opportunity to be heard has been afforded to the lessee.

Subpart 3307 – Mineral Deposits Affected by Section 6 of Outer Continental Shelf Lands Act

§3307.1 Effect of regulations on provisions of lease.

(a) As contemplated by section 6(b) of the act, the preceding regulations in this part so far as they are applicable and the following regulations will supersede the provisions of any lease which is determined to meet the requirements of section 6(a) of the act, to the extent that they cover the same subject matter, with the following exceptions: The provisions of a lease with respect to the area covered by the lease, the minerals covered by the lease, the rentals payable under the lease, the royalties payable under the lease (subject to the provisions of sections 6(a)(8) and 6(a)(9) of the act), and the term of the lease (subject to the provisions of section 6(a)(10) of the act and, as to sulphur, subject to the provisions of section 6(b)(2) of the act) shall continue in effect and, in the event of any conflict or inconsistency, shall take precedence over those regulations.

(b) A lease that meets the requirements of section 6(a) of the act shall also be subject to all operating and conservation regulations applicable to the Outer Continental Shelf, as well as the regulations relating to geophysical and geological exploratory operations and to pipeline rights-of-way in the Outer Continental Shelf, to the extent that those regulations are not contrary to or inconsistent with the provisions of the lease relating to the area covered, the minerals covered, the rentals payable, the royalties payable, and the term of the lease. Nothing herein should be construed to waive compliance with any provision of any State lease the subject matter of which is not covered in the regulations in this part.

§3307.2 Leases of other minerals.

The existence of a lease that meets the requirements of section 6(a) of the act will not preclude the issuance of other leases of the same area for deposits of other minerals: *Provided*, That no lease of minerals other than those covered by the lease shall authorize or permit the lessee thereunder unreasonably to interfere with or endanger operations under any existing lease: *And provided further*, That no such leases will be granted by the United States on any area while such area is included in a lease covering sulphur under section 6(b) of the act.

§3307.3 Obligations of lessee.

§3307.3-1 Bonds.

Within 30 days from the effective date of the regulations in this part or within such further period or periods as may be fixed from time to time by the authorized officer, the lessee under a lease meeting the requirements of section 6(a) of the act must furnish a bond as provided in §3304.1.

§3307.3-2 Wells.

(a) After due notice in writing, the lessee shall drill and produce such wells as the Secretary may reasonably require in order that the leased area or any part thereof may be properly and timely developed and produced in accordance with good operating practice.

(b) At the election of the lessee, the lessee may drill and produce other wells in conformity with any system of well spacing or production allotments affecting the area, field, or pool in which the leased area or any part thereof is situated, which is authorized or sanctioned by applicable law or by the Secretary.

(c) The lessee shall drill and produce such wells as are necessary to protect the lessor from loss by reason of production on other properties, or in lieu thereof, with the consent of the Oil and Gas Supervisor, to pay a sum determined by the supervisor as adequate to compensate the lessor for failure to drill and produce any such well. In the event that this lease is not being maintained in force by other production of oil or gas in paying quantities or by other approved drilling or reworking operations, such payments shall be considered as the equivalent of production in paying quantities for all purposes of this lease.

§3307.3-3 Inspection.

The lessee shall keep open at all reasonable times for the inspection of any duly authorized officer of the Department of the Interior, the leased area and all wells, improvements, machinery and fixtures thereon and all books, accounts, maps and records relative to operations and surveys or investigations on or with regard to the leased area or under the lease.

§3307.3-4 Diligence; compliance with regulations and orders.

The lessee shall exercise reasonable diligence in drilling and producing the wells herein provided for,

shall carry on all operations in accordance with approved methods and practices including those provided in the operating and conservation regulations for the Outer Continental Shelf; shall remove all structures when no longer required for operations under the lease to sufficient depth beneath the surface of the waters to prevent them from being a hazard to navigation and the fishing industry; and shall carry out at expense of the lessee all lawful and reasonable orders of the lessor relative to the matters in this section. On failure of the lessee so to do the lessor shall have the right to enter on the property and to accomplish the purpose of such orders at the lessee's cost: *Provided*, That the lessee shall not be held responsible for delays or casualties occasioned by causes beyond the lessee's control.

§3307.3-5 Freedom of purchase.

The lessee shall accord all workmen and employees directly engaged in any of the operations under the lease complete freedom of purchase.

§3307.3-6 Removal of property on termination of lease.

Upon the expiration of any lease, or the earlier termination thereof as provided in the regulations in this part, the lessee shall within a period of one year thereafter remove from the premises all structures, machinery, equipment, tools, and materials other than improvements needed for producing wells or for drilling or producing other leases, and other property permitted by the lessor to be maintained.

§3307.4 Exploration and operations.

§3307.4-1 Purchase of production.

In time of war, or when the President of the United States shall so prescribe, the United States shall have the right of first refusal to purchase at the market price all or any portion of the oil or gas produced from the leased area, as provided in section 12(b) of the act.

§3307.4-2 Suspension of operations during war or national emergency.

Upon recommendation of the Secretary of Defense, during a state of war or national emergency declared by the Congress or the President of the United States after August 7, 1953, the Secretary is authorized to suspend any or all operations under a lease, as provided in section 12(c) of the act: *Provided*, That just compensation shall be paid by the United States to the lessee whose operations are thus suspended.

§3307.4-3 Restriction of exploration and operations.

The United States shall have the right, as provided in section 12(d) of the act, to restrict from exploration and operations the leased area or any part thereof which may be designated by and through the Secretary of Defense, with the approval of the President of the United States, as, or as part of, an area of the Outer Continental Shelf needed for national defense. So long as such designation remains in effect no exploration or operations may be conducted on the surface of the leased area or the part thereof included within the designation except with the concurrence of the Secretary of Defense. If operations or production under any lease within any such restricted area shall be suspended, any payments of rentals, minimum royalty, and royalty prescribed by such lease likewise shall be suspended during such period of suspension of operations and production, and the term of such lease shall be extended by adding thereto any such suspension period, and the United States shall be liable to the lessee for such compensation as is required to be paid under the Constitution of the United States.

53307.4-4 Geological and exploration; **rights-of-way.**

The United States reserves the right to authorize the conduct of geological and geophysical exploration in the leased area which does not interfere with or endanger actual operations under the lease and the right to grant such easements or rights-of-way, upon, through, or in the leased area as may be necessary or appropriate to the working of other lands containing the deposits described in the act, and to the treatment and shipment of products thereof by or under authority of the Government, its lessees or permittees, and for other public purposes, subject to the provisions of section 5(c) of the act where they are applicable and to all lawful and reasonable regulations and conditions prescribed by the Secretary thereunder.

~3307.4-S Leases of atslphtrr and other mined.

The United States reserves the right to grant sulphur leases and leases of any mineral other than oil, gas, and sulphur within the leased area or any part thereof, subject to the provisions of sections 8(c), 8(d), and 8(e) of the act and all lawful and reasonable regulations prescribed by the Secretary thereunder: *Provided*, That no such sulphur lease or lease of other mineral shall authorize or permit the lessee thereunder unreasonably to interfere with or endanger operations under the lease which is continued under section 6 of the act.

§3307.5 Remedies in case of default.

(a) Whenever the lessee fails to comply with any of the provisions of the act or of the lease or of the lawful and reasonable regulations issued within 90 days after the authorized officer has determined that the lease meets the requirements of section 6(a) of the act, the lease shall be subject to cancellation as follows:

(1) If, at the time of such default, no producing. or is capable of producing, oil or gas in paying quantities from the leased area, whether h well drilled from a rfoce location within the leased area or be directionally drilled from a urfnce ocetion on adjacent or adjoining lands the ease may be canceled by the Secretary (subject to the ight of judicial review as omded in section 3(j) of the act), if such default continues for the period of 30 days after iling of notice by registered letter to the lessee at h e l'a record post office d&eas.

(2) If, at the time of ch default, any well a producing, or is capable of producing, oil or gas in eyirtg quantities from the leased area, whether uch well be drilled from a urface location within the leased area or a directionally drilled from urface ocatjon on adjacent or adjoining lands, the lease may be canceled by an appropriate proceeding in any United tatea district court having jurisdiction under the provisions of section (b) of the act if uch efautt continues for the period of 30 ya after aiting of notice by registered letter to the saee at the ersee'a eeord post office address.

(b) Xf any such default contimrea for the period of 30 days after mailing of notice by registered letter to the lessee at the lessee's record post office address, the lessor may then exercise any Icgaf or equitable remedy which the lessor may have: however, the remedy of cancellation of the lease may be exercised only under the conditiom and subject to the limitations set out in paragraph (a) of this section, or pursuant to section S(i) of the act.

(c) A waiver of any particular default ahall not prevent the cancellation of the lease or the exercise of any other remedy the lessor may have by re=on of any other cause or for the same cause occurring at any other time.

33307.6 Heirs and successors in interest.

Each obligation under any lease and under the regulations in this part shall extend to and be binding upon, and every benefit thereunder shall inure to. the heirs, executors, administrators, succeaaom, or easigna of the lessee.

PUBLIC LAW 212

83rd CONGRESS

. SESSION

OUTER CONTINENTAL SHEIF LANDS ACT

(67 Stat. 462)

(43 U.SC 1331-1343)

Public Law 212 – 83rd Congress
ttaptar 345- 1st Session
H. R. 5134

AN ACT

All 67 Stat. 462

To provide for the jurisdiction of the United Stat- oyer the submerged lands of the outer Castinenkf Shelf, and to authorize the Secrekry of the Interior to lease such Ian& for cerkin purpoaek

Be it enacted by the Senate and America in Congress assembled, That this Act may be cited as the "Outer Continental Shelf lands Act."

Outer Continental Shelf Lands Act

Sec. 2. Definitions. – When used in this Act–

(a) The term "outer Continental Shelf" means all submerged landt lying seaward and outside of the area of lands beneath navigable waters as defined in section 2 of the Submerged Lands Act (Publiblic Law 31, Eighty-third Congress, first session), and of which the subsoil and seabed appertain to the United States and are subject to its jurisdiction and control;

Ante, p. 29.

(b) The term "'secretary" means the Secretary of the Interior;

(c) The term "mineral lease" means any form of authorization for the exploration for, or development or removal of deposits of, oil, gas, or other minerals; and

(d) The term "person" includes, in addition to a natural person, an association, a State, a political subdivision of a State, or a private, public, or municipal corporation.

Sec. 3. Jurisdiction Over Outer Continental Shelf. –

(a) It is hereby declared to be the policy of the United States that the subsoil and seabed of the outer Continental Shelf appertain to the United States and re subject to its jurisdiction, control, and power of disposition as provided in this Act.

(b) This Act shall be construed in such manner that the character xv high seas of the waters above the outer Continental Shelf and the right to navigatiotr and fishimg therein shall not be affeckd.

Sec. 4. Laws Applicable to Outer Continental Shelf. -

(a)(l) The Constitution and laws and civil and political jurisdiction of the United States are hereby extended to the subsoil and seabed of the outer Continental Shelf and to all artificial islands and fixed structures which may be erected thereon for the purpose of exploring for, developing, removing, and transporting resources therefrom, to the same extent as if the outer Continental Shelf were an area of exclusive Federal jurisdiction located within a State; provided, however, That mineral leases on the outer

be maintained or issued only under the provisions of this Act.

State laws.

(2) To the extent that they are applicable and not inconsistent with this Act or with other Federal laws and regulations of the Secretary now in effect or hereafter adopted, the civil and criminal laws of each adjacent State as of the effective date of this Act are hereby declared to be the law of the United States for that portion of the subsoil and seabed of the outer Continental Shelf, and artificial islands and fixed structures erected thereon, which would be within the area of the State if its boundaries were extended seaward to the outer margin of the outer Continental Shelf, and the President shall determine and publish in the Federal Register such projected lines extending seaward and defining each such area. All of such applicable laws shall be administered and enforced by the appropriate officers and courts of the United States. State taxation laws shall not apply to the outer Continental shelf.

Publication of projected State lines,

Jurisdiction of U.S. district courts.

(b) The United States district courts shall have original jurisdiction of cases and controversies arising out of or in connection with any operations conducted on the outer Continental Shelf for the purpose of exploring for, developing, removing or transporting by pipeline the natural resources, or involving rights to the natural resources of the subsoil and seabed of the outer Continental Shelf, and proceedings with respect to any such case or controversy may be instituted in the judicial district in which any defendant resides or may be found, or in the judicial district of the adjacent State nearest the place where the cause of action arose.

Worker's compensation.

44 Stat. 1424. 33 USC 901.

(c) With respect to disability or death of an employee resulting from any injury occurring as the result of operations described in subsection (b), compensation shall be payable under the provisions of the Longshoremen's and Harbor Workers' Compensation Act. For the purposes of the extension of the provisions of the Longshoremen's and Harbor Workers' Compensation Act under this section —

(1) the term "employee" does not include a master or member of a crew of any vessel, or an officer or employee of the United States or any agency thereof or of any State or foreign government, or of any political subdivision thereof;

(2) the term "employer" means an employer any of whose employees are employed in such operations; and

(3) the term "United States" when used in a geographical sense includes the outer Continental Shelf and artificial islands and fixed structures thereon.

61 Stat. 136. 29 USC 167.

(d) For the purposes of the National Labor Relations Act, es amended, any unfair labor practice, as defined in such Act, occurring upon any artificial island or fixed structure referred to in subsection (a) shall be deemed to have occurred within the judicial district of the adjacent State nearest the place of location of such island or structure.

Coast Guard regulations, etc.

(e)(l) The head of the Department in which the Coast Guard is operating shalll have authority to promulgate and enforce such reasonable refutations with respect to lights and other warning devices, safety equipment, and other matters relating to the promotion of safety of life and property on the islands and structures referred to in subsectoion (a) or on the waters adjacent thereto. as be may deem necessary.

Penalty.

(2) The head of the Department in which the Coast Guard is operating may mark for the protection of navigation any such island or structure whenever the owner has failed suitably to mark the same in accordance with regulations issued hereunder. and the owner shall pay the cost thereof. Any person, firm, company, or corporation who shall fail or refuse to obey any of the lawful rules and regulations issued hereunder shall be guilty of a misdemeanor and shall be fined not more than $100 for each offense. Each day during which such violation shall continue shall be considered a new offense.

Artificial islands, etc.

(f) The authority of the secretary of the Army to prevent obstruction to navigation in the navigable waters of the United States is hereby extended to aratificial islands and fixed structures located on the outer Continental Shelf.

(g) The specific application by this section of certain provisions of few to the subsoil and seabad of the outer continental Shelf and the artificial islands and fixed structures referred to in subsection (a) or to acts or offenses occurring or committed thereon shall not give rise to any inference that the application to such islands and structures, acts, or offenses of any other provision of tow is not intended.

Sec. 5. Administration of Leasing of the Outer Continental Shelf. —

(a)(1) The Secretary shall administer the provisions of this Act relating to the leasing of the outer Continental Shelf, and shall prescribe such rules and regulations as may be necessary to carry out such provisions. The Secretary may at any time prescribe and amend such rules and regulations as he determines to be necessary and proper in order to provide for the prevention of waste and conservation of the natural resources of the outer Continental Shelf, and the protection of correlative rights therein, and, notwithstanding any other provisions herein, such rules and regulations shall apply to all operations conducted under a lease issued or maintained under the provisions of this Act. In the enforcement of conservation laws, rules, and regulations the Secretary is authorized to cooperate with the conservation agencies of the adjacent States. Without limiting the generality of the foregoing provisions of this section, the rules and regulations prescribed by the Secretary thereunder may provide for the assignment or relinquishment of leases, for the sale of royalty oil and gas accruing or reserved to the United States at not less than market value, and, in the interest of conservation, for unitization, pooling, drilling agreements, suspension of operations or production, reduction of rentals or royalties, compensatory royalty agreements, subsurface storage of oil or gas in any of said submerged lands, and drilling or other easements necessary for operations or production.

Prevention of waste.

cooperation with State conservation agencies.

(2) Any person who knowingly and willfully violates any rule or regulation prescribed by the Secretary for the prevention of waste, the conservation of the natural resources, or the protection of correlative rights shall be deemed guilty of a misdemeanor and punishable by a fine of not more than $2,000 or by imprisonment for not more than six months, or by both such fine and imprisonment, and each day of violation shall be deemed to be a separate offense. The issuance and continuance in effect of any lease, or of any extension, renewal, or replacement of any lease under the provisions of this Act shall be conditioned upon compliance with the regulations issued under this Act and in force and effect on the date of the issuance of the lease if the lease is issued under the provisions of section 8 hereof, or with the regulations issued under the provisions of section 6(b), clause (2), hereof if the lease is maintained under the provisions of section 6 hereof.

Penalty.

(b)(1) Whenever the owner of a nonproducing lease fails to comply with any of the provisions of this Act, or of the lease, or of the regulations issued under this Act and in force and effect on the date of the issuance of the lease if the lease is issued under the provisions of section 8 hereof, or of the regulations issued under the provisions of section 6(b), clause (2), hereof, if the lease is maintained under the provisions of section 6 hereof, such lease may be cancelled by the Secretary, subject to the right of judicial review as provided in section 8 (j), if such default continues for the period of thirty days after mailing of notice by registered letter to the lease owner at his record post office address.

Cancellation of lease.

(2) Whenever the owner of any producing lease fails to comply with any of the provisions of this Act, or of the lease, or of the regulations issued under this Act and in force and effect on the date of the issuance of the lease if the lease is issued under the provisions of section 8 hereof, or of the regulations issued under the provisions of section 6(b), clause (2), hereof, if the lease is maintained under the provisions of section 6 hereof, such lease may be forfeited and cancelled by an appropriate proceeding in any United States district court having jurisdiction under the provisions of section 4(b) of this Act.

(c) Rights-of-way through the submerged lands of the outer Continental Shelf, whether or not such lands are included in a lease maintained or issued pursuant to this Act, may be granted by the Secretary for pipeline purposes for the transportation of oil, natural gas, sulphur, or other mineral under such regulations and upon such conditions as to the application therefor and the survey, location and with thereof as may be prescribed by the Secretary, and upon the express condition that such oil or gas pipelines shall transport or purchase without discrimination, oil or natural gas produced from said submerged lands in the vicinity of the pipeline in such proportionate amounts as the Federal Power Commission, in the case of gas, and the Interstate Commerce Commission, in the case of oil, may, after a full hearing with due notice thereof to the interested parties, determine to be reasonable,

Pipeline rights-of-way.

Forfeiture of grant

taking into account, among other things, conservation and the prevention . waste. Failure to comply with the provisions of this section or the regulations and conditions prescribed thereunder shell be ground for forfeiture of the grant in an appropriate judicial proceeding instituted by the United States in any United States district court having jurisdiction uner the provisions of section 4(b) of this Act.

Sec. 6. Maintenance of Leases on outer Continental shelf. -

(a) The provisions of this section shall apply to any mineral lease covering submerged lands of the outer Continental Shelf issued by any State (including any extension, renewal, or replacement thereof heretofore granted pursuant to such lease or under the laws of such State) if -

Filing of lease, etc.

(1) such lease, or a true copy thereof, is filed with the Secretary by the lessee or his duly authorized agent within ninety days from the effective date of this Act, or within such further period or periods as provided in section 7 hereof or as may be fried from time to time by the Secretary.

(2) such lease, was issued prior to December 21, 1948, and would have been on June 5, 1950, in force and effect in accordance with its terms and provisions and the law of the State issuing it had the State had authority to issue such lease;

(8) there is tiled with the Secretary, within the period or periods epecified in paragraph (1) of this subjection, (A) a certificate issued by the State official or agency having jurisdiction over such lease stating that it would have been in force and effect as sequired by the provisions of paragrsph (2) of this subsection, or (B) in the absence of such certificate, evidence in the form of affidavits, receipts, cancelled checks or other documents that may be required by the Secretary, sufficient to prove that such lease would have been co in force and effect;

Sums payable.

(4) except as otherwise provided in section 7 hereof, all rents, royalties, and other come payable under such lease between June 6, 1950, and the effective date of this Act, which have not been paid in accordance with the provisions thereof, or to the Secretary a to the Secretary of the Navy, are paid to the Secretary within the period or periods specified in paragraph (1) of this subsection, end all rents, royalties, and other sums payable under such lease after the effective date of this Acts, are paiad to the secretary, who shall deposit such payments in the Treasury in accordance with section 9 of this Act;

(6) the bolder of such lease certificate that such lease shall continue to be subject to the overriding royalty obligatins existing on the effective date of this Act.

(6) such lease was not obtained by fraud or missrepresentation;

(7) such lease, if issued on or after June 28, 1947, was issued upon the basis of competitive bidding;

Royalty.

(8) such lease provides for a royalty to the lessor on oil and gas of not less then 12½ per centum and on sulphur of not less than S per centum in amount or value of the production saved, removed, or cold from the lease, or, in any case in which the lease provides for a lesser royalty, the balder thereof consents in writing, filed with the Secretary, to the increase of the royalty to the minimum herein specified;

(9) the holder thereof pays to the Secretary within the period or periods specified in paragraph (1) of this susbsection an amount quivalent to any severance, gross production, or occupation taxes imposed by the State issuing the State issuing the lease on the production from the lease, less the State's sroyalty interest in such production, between June 5, 1950, and the effective date of this Act and not hereto fore paid to the State, and thereafter pays to the Secretary as an additional royalty on the production from the lease, less the United States' royalty interest in such production, a sum of money equal to the amount of the severance, gross production, or occupation taxes which would have been payable on such production to the State issuing the lease under its laws as they existed on the effective date of this Act;

(10) such lease will terminate within a period of not more than five years effective date of this Act in the absence of production or operations for drilling, or, in any case in which the lease provides for a longer period, the holder thereof consents in writing filed with the Secretary, to the reduction of such period so that it will not exceed the maximum period herein specified; and

Termination of lease.

(11) the holder of such lease furnishes such surety bond, if any, as the Secretary may require and complies with such other reasonable requirements as the Secretary may deem necessary to protect the interests of the United States.

surety bond.

(b) Any person holding mineral lease, which as determined by the secretary meets the requirements of subsection (a) of this section, may continue to maintain such lease, and may conduct operations thereunder, in accordance with (1) its provisions as to the area, the minerals covered, rentals and, subject to the provisions of paragraphs (8). (9) and (10) Of subsection (a) of this section, as to royalties and as to the term thereof and of any extensions, renewals, or replacements authorized therein or heretofore authorized by the laws of the State issuing such lease, or, if oil or gas was not being produced in paying quantities from such lease on or before December 11, 1960, or if production in paying quantities has ceased since June S, 1950, or if the primary term of such lease has expired since December 11, 1950, then for a term from the effective date hereof equal to the term remaining unexpired on December 11, 1950, under the provisions of such lease or any extensions, renewals, or replacements authorized therein, or heretofore authorized by the laws of such State, and (2) such regulations as the Secretary may under section S of this Act prescribe within ninety days after making his determination that such lease meets the requirements of subsection (a) of this section: Provided, however. That any rights to sulphur under any lease maintained under the provision of this subsection shall not extend beyond the primary term of such lease or any extension thereof under the provisions of such subsection (b) unless sulphur is being produced in paying quantities or drilling, well reworking, plant construction, or other operations for the production of sulphur, as approved by the Secretary, are being conducted on the area covered by such lease on the date of expiration of such primary term or extension: Provided *further*, That if sulphur is being produced in paying quantities on such date, then such rights shall continue to be maintained in accordance with such lease and the provisions of this Act: ***Provided further that, if*** the primary term of a lease being maintained under subsection (b) her of has expired prior to the effective data of this Act and oil or gas is being produced in paying quantities on such date, then such rights to sulphur es the lessee may have under such lease shall continue for twenty-four months from the effective date of this Act and as long thereafter as sulphur is produced in paying quantities, or drilling, well working, plant construction, or other operations for the production of sulphur, as approved by the Secreetary, are being conducted on the area covered by the lease.

Maintenance of lease.

Sulphur.

(c) The permission grantad in subsection (b) of this section shall not be construed to be a waiver of such claims, if any, as the United States may have against the lessor or the lessee or any other person respecting sums payable or paid for or under the lease, or respecting ativities conducted under the lease, prior to the effective date of this Act.

Nonwaiver of Us. claims.

(d) Any person complaining of a negative determination by the Secretary of the Interior under this section may have such determination reviewed by the United States District Court for the District of Columbia by filing a petition for review within sixty days after receiving notice of such action by the secretary.

Court *review* or determination.

(e) In the event any lease maintained under this section covers lands beneath navigable waters, as that term is used in the Submerged Lands Act, as well as lands of the outer Continental Shelf, the provisions of this section shall apply to, such lease only insofar as it covers lands of the outer Continental Shelf.

La& beneath navigable waters.

Sec. 7. Controversy Over Jurisdiction. -

Agreements with State.

In the event of a controversy between the United States and a State as to whether or not lands are subject to the provisions of this Act, the Secretary is authorized, notwithstanding the provisions of subsections (a) and (b) of section 6 of this Act, and with the concurrence of the Attorney General of the United States, to negotiate and enter into agreements with the State, its political subdivision or grantee or a lessee thereof, respecting operations under

existing mineral leases and payment and impounding of rents, royalties, at other sums payable thereunder, or with the State, its political subdivision or grantee, inspecting the issuance or nonisssuance of ncw mineral leases pending the settlement or adjuction Of the cotroversy. The authorization contained in the preceding sentence of this section shall not be construed to be a limitation upon the authority conferred on the Secretariy in other sections of this A ct. Payments made pursuant to such agreement, or pursuant to any stipulation between the United States and a State, shall be considered as compliance with section 6(a)(4) hereof. Upon the termination of such ● greement or stipulation by *reason of* the final settlement or adjudication of such controversy, if the lends subject to MY mineral lease are determined to be in whole or in pert lands subject to the provisions of this Act the lease, if he has not already done so, shall comply with the requirement of section 6(a) and thereupon the provisions of shall govern such lease. The notice concerning "Oil and Gas Operatopms in the Submerged Coastal lands of the Gulf of Mexico" issued by the Secretary on December 11, 1950 (15 F.R. 8835), es emended by the notice dated January 26,1951 (16 F. R 9530, and as supplemented by the notices dated February 2, 1951 (16 F.R. 1203), March 5, 1951 (16 F. R. 2195), April 23, 1951 (16 F. R 3623), June 25, 1951 (16 F. R. 6404), August 22, 1951 (16 F. R 8720), October 24, 1951 (16 F. R 10998), December 21, 1951 (17 F. R. 43). March 25, 1952 (17 F. R. 2821), June 26, 1952 (17 F. R 5833), and December 24, 1962 (18 F. R 48), respectively, is hereby approved and confirmed.

Bids.

Sec. 8. Leasing of Outer Continental Shelf. -

Oil and gas leases.

(a) In order to meet the urgent need for further exploration and development of the oil and gas deposits of the submerged lands of the outer Continental Shelf, the Secretary is authorized to grant to the highest responsible qualified bidder by competitive bidding under regulations promulgated in advance, oil and gas leases on submerged lands of the outer Continental Shelf which are not covered by lessee meeting the requirement of subsection (a) of section 6 of this Act. The bidding shall be (1) by sealed bids, and (2) et the discretion of the Secretary on the basis of a cash bonus with a royalty fried by the secretory Secretary at not less then 12½ per centum in amount or value of the production saved, removed or sold, or on the basis of royalty, but at not less than the per centum above mentioned, with cash bonus fixed by the Secretary. .

(b) An ON and gas loose issued by the Secretary pursuant to this section shelf (I) cover a compact area not exceeding five thousand seven hundred and sixty acres, the Secretary may determine, (2) be for a period of five years and es long thereafter as oil or gee may be produced from the area in paying quantities, or drilling or well reworking operations es approved by the Secretary are conducted thereon, (3) require the payment of a royalty of not less than 12½ Per centum in the amount or value of the production saved, removed, or cold from the lease, and (4) contain such rental provisions and such other terms and provisions es the Secretary may prescribe at the time of offering the area for lease.

Sulphur leases.

(c) In order to meet the urgent need for further exploration and development of the sulphur deposits in the submerged lands of the outer Continental Shelf, the is authorized to grant to the qualified persons offering the highest cash bonuses on a banis of competitive bidding sulpur leases on submerged fends of the outer Continental Shelf, which are not covered by leases which include sulphur and meet the requirements of subsection (a) of section 6 of this Act, and which sulphur losses shell be offered for bid by sealed bids and granted on separate leases from oil and gee leases, and for a separate consideration, and without priority or preference accorded to oil and gas lessees on the seine area.

(d) A sulphur lease issued by the Secretary pursuant to this section shall (1) cover an area of such size and dimensions es the Secretary may determine, *(2) be* for a period of not more than ten years and so long thereafter es sulphur may be produced from the areas in paying quantities or drilling, well reworking, plant construction, or other operations for the production of sulphur, as approved by the secretary, are conducted thereon, (3) require the payment to the United States of such royalty as may be specified in the lease but not less than 5 per centum of the gross production or value of the sulphur at the wellhead, and (4) contain such rental provisions and such other terms and provisions as the Secretary may by regulation prescribe at the time of offering the area for lease.

Other mineral leases.

(e) The Secretary is authorized to grant to the qualified persona offering the highest cash bonuses on a basis of competitive bidding leases of any mineral other than oil, gas and sulphur in any area of the outer Continental Shelf not then under lease for such mineral upon such royalty, rental, and other terms and conditions as the Secretary may prescribe at the time of offering the area for lease.

Notices, publication

(f) Notice of sale of leases and the terms of bidding authorized by this section shall be published at least thirty days before the date of sale in accordance with rules and regulation promulgated by the Secretary.

Deposits.

(g) All moneys paid to the Secretry for or under t www leas graned uraua shall be deposited in the Treasury in accordance with section 9 of this Act.

(h) The issuance of any lease by the Secretary pursuant to this Act, or the making of any interim arrangement by the Secretary pursuant to section 7 of this Act shall not prejudice the ultimate settlement or adjudication of the" question es to whether or not the area Involved b in the outer Continental Shelf.

Cancellation.

(1) The Secretary may cancel any lease obtained by fraud or misrepresentation.

(J) Any person complaining of a cancellation of a lease by the Secretary may have the Secretary's action reviewed in the United States District Court for the District of Columbia by filing a petition for review within sixty days after the Secretary takes such action.

Sec. 9. Disposition of Revenues. -

All rentals, royalties and other sums paid to the Secretary or the secretary of the Navy under any lease on the outer Continental Shelf for the period from June 5, 1950, to date, and thereafter shall be deposited in the Treasury of the United States and credited to miscellaneous receipts.

Sec. 10. Refunds -

(a) subject to the provisions of subsection (b) hereof, when it appears to the satisfation of the secretary that any person has made a payment to the United States in connection with any lease under this Act in excess of the amount he was lawfully required to pay, such excess shall be repaid without interest to such person or his legal representative, if a request for repayment of such excess is filed with the Secretary within two years after the making of the Payment, or within ninety days after the effective date of this Act. The Secretary shall certify the amounts of all such repayments to the secretary of Treasury, who is odmdzed and directed to make such repayment. out of any moneys in the special account established under section 9 of this Act and to issue his warrant in settlement thereof.

Report to Congress.

(b) No refund of or credit for such excess payment shall be made until alter the expiration of thirty days from the date upon which a report giving the name of the person to whom the refund or credit is to be made, the amount of such refund or credit, and a summary of the facts upon which the determination of the Secretary was made is submitted to the President of the Senate and the Speaker of the House of Representatives for transmittal to the appropriate legislative committee of each body, reactively: Provided, That if the Congress shall not be in session on the date of such submissin or shall adjourn prior to the expiration of thirty days from the date of such submission, then such payment or credit shall not be made until thirty days after the opening day of the next succeeding session of Congress.

Sec. 11. Geological and Geophysical Exploration. -

Any agency of the United States and any person authorized by the Secretary may conduct geological and geophysical explorations in the outer Continental Shelf, which do not interfere with or endanger actual operations under any lease maintained or granted pursuant to this Act and which are not unduly harmful to aquatic life in such area.

sec. 19. Reservations. -

(a) The President of the United States may, from time to time, withdraw from disposition any of the unleased ands of the outer Continental Shelf.

War.

(b) In time of war, or when the President shall so prescribe, the United States the right of first refusal to purchase at the market price all or any portion of any mineral produced from the outer Continental Shelf.

(c) All leases issued uner this Act, and leases, the maintenance and operation of which are authorized under this Act, shall contain or be construed to contain a provision whereby authority is vested in the Secretary, upon a recommendation of the Secretary of Defense, during a state of war or national emergency by the Congres or the President of the United States after the effective date of this Act, to suspend operations under any lease; and all such leases shall contain or be construed to contain provisions for the payment of just compensation to the lessee whose operations are thus suspended.

Natioanl defense areas.

(d) The United States reserves and retains the right to designate by end through the Secretary of Defense, with the approval of the President, as areas restrictedd from exploration end operation that part of the outer Continental Shelf needed for defense; and so long es such designation remains in effect no exploration or operations may be conducted on any part of the surface of such area except with the concurrence of the Secretary of Defense; and if operations or production under any lease theretofore issued on lands within any such restricted area shall be suspended, any payment of rentals, minimum royalty, end royalty prescribed by such lease likewise shall be suspended during such period of suspension Of operation and production, and the term of such lease shall be extended by adding thereto any such suspension period, and the United States shall be liable to the lease for such compensation as is required to be paid under the Constitution of the United States.

Uranium, thorium, etc.
60 Stat. 760.
42 USC 1806.

(e) All uranium, thorium, and all other materials determined pursuant to paragraph (1) of subsection (b) of section 5 of the Atomic Energy Act of 1946, as emended, to be peculiarly essential to the production of fissionable material, contained. in whatever concentration, in deposits in the subsoil or seabed of the outer Continental Shelf are hereby reservc d for the use of the United States

Helium

(f) The United States reserves and retains the ownership of and the right to extract all helium, under such rules and regulations shall be prescribed by the Secretary, contained in gas produced from any portion of the outer Continental Shelf which may be subject to any lease maintained or granted pursuant to this Act, but the helium shall be extracted from such gas so as to cause no substantial delay in the delivery of gas produced to the purchaser of such gas.

Sec. 13. Naval Petroleum Reserve Executive Order Repealed. -

18 F.R. 405.

Executive Order Numbered 10426, dated January 16, 1953, entitled "Setting Aside Submerged Lands of the Continental Shelf as a Naval Petroleum Reserve, "is hereby revoked.

Sec. 14. Prior Claims Not Affected. –

Nothing herein contained affect such rights, if any, as may have been acquired under any law of the United States by any person in lands subject to this Act and such rights, if any, shall be governed by the law in effect at the time they may have been acquired: Provided, however, that nothing herein contained is intended or shall be construed as a finding, interpretation, or construction by the Congress that the law under which such rights may be claimed in fact applies to the lands subject to this Act or autborizes compels the grating of such rights in such lands and that the determination of the applicability or effect of such law shall be unaffected by anything herein contained.

Sec. 15. Report by Secretary. -

As aeon as practicable after the end of each fscal Year, the Secretary shall submit to the President of the Senate and the Speaker of the House of Representatives a report detailing the amounts of all moneys received and expended in connection with the administration of this Act during the preceding fiscal year.

Sec. 16. Appropriation. -

There is hereby authorized to be appropriated sums as may be necessary to carry out the provisions of this Act.

Sec. 17. separability. -

If any provision of this Act, or any section, subsection, sentence, clause, phrase or individual word, or the application thereof to any person or circumstance is held invalid, the validity of the remainder of the Act and of the application of any such provision, section, subsection, sentence, clauae, phrase or individual word to other persons and circumstances shall not be affected hereby.

Approved August 7, 1953.

Attachment B.

Department of the Interior OCS Orders 1 thru 12

OCS ORDERS 1 thru 12

Governing

Oil, Gas, And Sulphur Leases

In The Outer Continental Shelf

Gulf Of Mexico Area



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION

Gulf Of Mexico Area

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Robert Evans

R o b e r t F . E v a n s
S u p e r v i s o r

Approved: August 28, 1969

Russell G. Wayland

R u s s e l l G . W a y l a n d
C h i e f , C o n s e r v a t i o n D i v i s

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
GULF OF MEXICO AREA

OCS ORDER NO. 2
Effective August 28,

DRILLING PROCEDURES OF F

This Order is established pu
250.11 and in accordance wit
exploratory wells drilled for
with the provisions of the sa
for oil and gas shall be drilled i
this Order which shall conti
After field rules have bee
wells shall be drilled in ac
fields containing more than
ment wells commenced prior to Oc
provisions of this Order, as
for the establishment of fi

Where sufficient geologic
exploratory drilling, oper
for the establishment of fie
application before more than five
the Operators may also make appl
field rules for existing fields
wells on the date of this Order. Application to D
for exploratory wells and develop
shall include all information requ
grated casing, cementing, mud, a
well, and shall comply with the r
from the requirements specified i
to 30 CFR 250.12(b).

1. Well Casing. All wells shall be cased and the cas
in accordance with the requirements
Application to Drill (Form 9-3
all zones which contain oil, gas,
protected by casing and cement. For the purpose of
the several casing strings in
drive or structural casing, conduct
intermediate casing, and liners
to true vertical depth (TVD).

A. Drive or Drilling, Driving, or Jetting to a below the Gulf floor or to such greater dep support unconsolidated deposits for initial drilling and fluid shall be a type that will not pollute quantity of cement sufficient to fill the annular space back to the Gulf floor must be used.

This casing shall be set by Casing.

B. Conductor and Surface Casing - Gener of proper casing setting depths shall be based factors including the presence o water depths on the well-to-drilling depth. Casing strings shall be determined tion fracture gradients and hydrostati within the conductor. The well and surface new pipe or reconditioned pipe that h to verify a new condition.

(1) Conductor Casing. This casing shall be set in with the table below. Adequate cement su fill the annular space back to the Gulf floor use. The cement may be washed out or displaced depth of 40 feet below the Gulf floor to removal upon well abandonment.

(2) Surface Casing. This casing shall be set at a depth accordance with the table below and cemen necessary to protect all fresh water san well control until the next string of casing This casing shall be cemented with a quantit to fill the calculated annular space to (a) a 1,500 feet above the casing shoe, or (b) within below the conductor casing. Whenever there are any indications of improper cementing, such cement channeling, or mechanical failu a temperature or cement bond survey shall before or after remedial cementing, to aid in whether the casing is properly cemented space is not adequately cemented by the primary the operator shall either recement or squ shoe after drilling out.

(3) Conductor and Surface Casing Setting Depths. These strings of casing shall be set at the depths specified in lowing table subject to minor variation t to be set in a competent bed; provided, ho conductor casing shall be set before dri formations known to contain oil or gas or, if unknown encountering such formations. These casing strings shall be

run and cemented prior to d
depth. For those wells which
conditions, the district engine
ting depth within the ra

Required Setting Depth Below G

Proposed Total Depth of Well or Depth of First Full String of Intermediate Casing (Casing Conductor Casing) feet from Rotary Table in Minimum Minimum				
0 - 7,000	1,500	2,500	300	800
7,000 - 9,000	1,750	3,000	400	800
9,000 -11,000	2,250	3,500	500	900
11,000 -13,000	3,000	4,000	600	900
13,000 -Below	3,500	4,500	700	1,000

C. Intermediate Casing. The distance of casing required by anticipated a ment and the interwtee lrl mecdoinadti be new pipe or reconditioned pip inspected to verify a new condition of c sufficient to cover and isol isolate abnormal pressur vals shall be used. If a liner is used as an string, the cement shall be test to determine whether a larger string has been achi the drWihle rsuch lloign.er is us it shall be extended to the face casing being used as pr

D. Production Casing. This string of casing completing the pwreoldluctfion be new pipe or reconditioned spected to verify a new coenmdeint manner necessary to cover or hydrocarbons, but in any fill the annular space at l producible hydrocarbon zone as production casing, the top and next larger string shall intermediate liners.

E. Pressure Tests. During the casing strings, except the pressure tested as shown in the exceed the working pressure of the casing

shall *be tested with* **water in the top** 100 **feet** of **the casing.** *If the pressure declines more than 10% in 30 min other indication of a leak, the casing sha paired, or an additional casing string* **run,** *and be tested again in the same manner.*

Casing String	**Minimum Pressure** *Test (psi)*
Conductor	*200 "*
Surface	*1,000*
Intermediate	*1,500 or 0.2 psi/ft., whichever is*
Liner	*1,500 or 0.2 psi/ft., whichever is*
Production	*1,500 or 0.2 psi/ft., whichever is*

After cementing any of the **above** *strings, drill commenced until a time lapse of:*

(1) 24 hours, or

(2) 8 hours under pressure for conductor 12 **hours** *under pressure for* **all** *other* **strings.** *(Cement is considered under pressure if float valves are employed and are shown ing* **the cement** *in place or* **when other means** *of holding pressure is used.)*

All casing pressure tests shall be *recorded on the drille*

2. *Blowout Prevention Equipment* *Blowout preventers and relate control equipment used, and* **tested** *in a leader, necessary to prevent drilling below the conductor casing, blowout prevention equipment* **maintained ready for use until drilling operations are** *completed, as follows:*

A. **Conductor Casing.** *Before* **drilling** *below* **this string, at least** *one remotely controlled* **bag-type** *blowout pr for circulating the drilling fluid to the* **vessel shall be installed.** *To avoid formation fracturing complete shut-in of the well, a large diame valves shall be installed on the conductor out preventer so as to permit the diversion other fluids; except that when the blowout on the Gulf Coast the choke, and kill lines shall be eq permit the diversion of hydrocarbons and*

B. *Surface* **Casing.** *Before drilling below this string prevention equipment shall include a minim motely controlled, hydraulically operat*

a working pressure which exceeds the maximum anticipate pressure, including one equipped with pipe rams, one with rams, and one bag-type; (2) a drilling spool with side outlets side outlets are not provided in the blowout preventer bod choke manifold; (4) a kill line; and (5) a fill-up line.

C. Intermediate String. Before drilling below this string the blow out prevention equipment shall include a minimum of: (1) four re- motely controlled, hydraulically operated, blowout preve a working pressure which exceeds the maximum anticipat pressure, including at least one equipped with pipe rams, blind rams, and one bag-type; (2) a drilling spool with si lets, if side outlets are not provided in the blowout pr body; (3) a choke manifold; (4) a kill line; and (5) a fill-up line.

D. Testing. Ram-type blowout preventers and related control ment shall be tested with water to the rated working press the stack assembly or to the working pressure of the cas ever is the lesser, (1) when installed; (2) before drilli after each string of casing is set; (3) not less than once e week while drilling; and (4) following repairs that require dis- connecting a pressure seal in the assembly. The bag-type blowout preventer shall be tested to 70 percent of the above pressure re- quirements.

While drill pipe is in use ram-type blowout preventers shall be actuated to test proper functioning once each trip, but in no event less than once each day. The hag-type blowout preventer shall be actuated on the drill pipe once each week. Accumulators or accumulators and pumps shall maintain a pressure capacity re- serve at all times to provide for repeated operation of hydraulic preventers. A blowout prevention drill shall be conducted weekly for each drilling crew to insure that "all equipment is operational and that crews are properly trained to carry out emergency duties. All blowout preventer tests and crew drills shall be recorded on the driller's log.

E. Other Equipment. An inside blowout preventer assembly (back pressure valve) and drill string safety valve in the open position shall be maintained on the rig floor at all times while drilling operations are being conducted. Separate valves shall be main- tained on the rig floor to fit all pipe in the drill string. A Kelly cock shall be installed below the swivel, and an essentially full opening Kelly cock shall be installed at the bottom of the Kelly of such design that it can be run through the blowout pre- venters.

3. Mud Program - General. The characteristics, use, and testing of drilling mud and the conduct of related drilling procedures shall be

such as are necessary to prevent the
of mud materials sufficient to i
readily accessible for use at all

A **Mud Control** Before starting out of hole with drill pipe, the
shall be circulated with the drill pipe just off bottom
mud is properly conditioned. When the
drill pipe, the annulus shall be filled with mud before
level drops below 100 feet, and a mechanical device f
the amount of mud required to fill the hole shall be
The volume of mud required to fill the hole shall be wa
any time there is an indication of
tion fluids, the necessary safety device (s) required
paragraph 2(E) above shall be in
drill pipe shall be run to bottom, and the mud properly co
tion. The mud shall not be circula
on or near bottom, unless well condition
pipe to bottom. The mud in the hole shall be
verse circulated prior to pulling d
the hole.

B **Mud Testing** Mud testing equipment shall b
tained on the drilling platform at all times,
shall be performed daily, or more frequ
warrant.

The following mud system monitoring equipm
(with derrick floor indicators) and used
drilling after setting and cementing the conductor ca

(1) Recording mud pit level indicator to d
volume gains. This indicator shall inclu
visual or audio warning device.

(2) Mud volume measuring device for acc
mud volumes required to fill the hole o

(3) Mud return indicator to determine tha
tially equal the pump discharge rate.

Robert F. Evans
Supervisor

Approved: August 28, 1969

Russell G. Wayland
Chief, Conservation Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
GULF OF MEXICO AREA

OCS ORDER NO. 3
Effective August 28, 1969

PLUGGING AND ABANDONMENT OF WELLS

This Order is established pursuant to the authority prescribed in 30 CFR 250.11 and in accordance with 30 CFR 250.41. Operator shall comply with the following minimum plugging and abandonment practices of general application to all wells drilled for oil, gas, and sulphur. Plugging and abandonment operations must not be commenced prior to oral approval from an authorized representative of the Geological Survey and shall be in accordance with any departure from the requirements specified in this Order must be approved pursuant to 30 CFR 250.12(b).

1. Permanent Abandonment.

   A. Isolation in Uncased Holes. In uncased portions of wells, cement plugs shall be spaced to extend 100 feet below the bottom to 100 feet above the top of any oil, gas, and water zones so as to isolate them in the strata in which they are found and to prevent them from escaping into other strata.

   B. Isolation of Open Hole. Where there is open hole (uncased and open into the casing string above) below the casing, cement plug shall be placed in the deepest casing as in (1) or (2) below, or in the event lost circulation conditions exist or are anticipated, the plug may be placed in accordance with (3) below:

      (1) A cement plug placed by displacement method so as to extend a minimum of 100 feet above and 100 feet below the casing shoe.

      (2) A cement retainer with effective back pressure control set not less than 50 feet, nor more than 100 feet, above the casing shoe with a cement plug calculated to extend at least 100 feet below the casing shoe and 50 feet above the retainer.

(3) A permanent type bridge plug set within 150 feet above the casing shoe with 50 feet o cement on top of the bridge plug. This plug shall be tested prior to placing subs plugs.

C. Plugging or Isolating Perforated Intervals. A cement plug shall be placed opposite all open per not squeezed with cement) extending a minimum of 100 feet above and 100 feet below the perforated i a casing plug whichever is less. In lieu of the cement plug, a bridge plug set at a maximum of 150 feet a forations with 50 feet of cement on top may be the perforations are isolated from the

D. Plugging of Casing Stubs. If casing is cut and recovered, cement plug 200 feet in length shall be placed to extend 100 feet above and 100 feet below the stub. A used in setting the required plug.

E. Plugging of Annular Space. An annular space that extends the Gulf floor shall be left open to drilled hole below. this condition exists, the annulus shall be plugged wit cement.

F. Surface Plug Requirement. A cement plug of at least 150 feet, with the top of the plug 150 feet or less below the Gulf floo shall be placed in the smallest string of casing which to the surface.

G. Testing of Plugs. The setting and location of the first plug below the top 150-foot plug, will be verified by either placing a minimum pipe weight of 15,000 pounds on the plug, or (2) testing with a minimum pump pressure of 1,000 psig wit more than a 10 percent pressure drop during a 15-minute

H. Mud. Each of the respective intervals of the hole between various plugs shall be filled with mud fluid of sufficient density to exert hydrostatic pressure exceeding the g formation pressure encountered while drilling such i

I. Clearance of Location. Casing and piling shall be severed and removed to at least 15 feet below the Gulf floor and the location shall be dragged to clear the well site of any ob structions.

2. Temporary Abandonment. Any drilling well which is to be temporarily abandoned shall be cemented as required for permanent abandonment except that plugs F and I of paragraph 1 above.

When casing extends above the Gulf fl
(retrievable or permanent) shall be set in
and 200 feet below the Gulf floor.

Robert F. Evans
Supervisor

Approved: August 28, 1969

Russell G. Wayland
Chief, Conservation Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
GULF OF MEXICO AREA

OCS ORDER NO. 4
Effective August 28, 1969

SUSPENSIONS AND DETERMINATION OF WELL PRODUCIBILITY

This Order is established pursuant to the authority prescribed in 30 CFR 250.11 and in accordance with 30 CFR 250.12(d)(l). An OCS lease provides for extension beyond its primary term for as long as oil or gas may be produced from the lease in paying quantities. An OCS lease may be maintained beyond the primary term, in the absence of actual production, a suspension of operations or production, or both, has been approved. An application for suspension of product for an initial period should be submitted prior to the expiration of the term of the lease. The supervisor may approve a suspension of production provided at least one well has been drilled on the lease and determined to be capable of being produced in paying quantities. The temporary or permanent abandonment of a well will preclude approval of a suspension of production as provided in 250.12(d)(l). Any departures from the requirements specified in this must be approved pursuant to 30 CFR 250.12(b).

A well may be determined to be capable of producing in paying quantities when the requirements of either 1 or 2 below have been met.

1. Production Tests.

   A. Oil Wells. A production test of at least two hours duration, following stabilization, is required.

   B. Gas Wells. A deliverability test of at least two hours duration, following stabilization, or a four-point back-pressure test, is required.

   C. Witnessing and Acceptance of Tests. All tests must be witnessed by an authorized representative of the Geological Survey. Tests not accompanied by operator's affidavit, or third-party witnessed test provided prior approval is obtained from the appropriate district office. The results of the witnessed or accepted test must justify a determination that the well is capable of producing in paying quantities,

2. *Production* **Capability.** *Information for dete should be submitted in time to p determination of urgency, dete or a Thely following may be consid a well is capable of producing in payin*

A. An induction-electric log of of **15 feet** *of producible sand in one s clude any interval which of appea the section counted as produc properties:*

(1) Electrical spontaneous pote millivolts beyond the small prevent a 20 negative millivo base line, a gamma ray log def cent of the maximum gamma ray clean water bearing sand may be **sub**

(2) A minimum true resistivity rati to the nearest clean **water** *sand of the* **producible section** *exhibits a minimum 2.0 ohm-meters.*

(3) A *porosity log indicating* **porosity** *in tion.*

B. Sidewall cores and core analysis which tion is producible.

C. A wire line formation test or evidence that to obtain such test results must indica section is producible.

D. All logs run must support other evidenc producible.

Robert F. Evans

Robert F. **Evans**
Supervisor

Approved: *August 28, 1969*

Russell G. Wayland

Russell G. **Wayland**
Chief, *Conservation Division*

UNITED STATES
DEPARTMENT OF THE INTERIO
GEOLOGICAL SURVEY
CONSERVATION DIVISION
GULF OF MEXICO AREA

OCS ORDER NO. 5
Effective June 5, 1972

SUBSURFACE SAFETY DEVICE

This Order is published pursuant to the a
250.11 and in accordance with the provisions of 30 CFR 250.41 (b)
as follows:

(b) Completed wells. In the conduct of all its operatio
the lessee shall take all steps necessary to prevent
blowouts, and the lessee shall immediately
action is required to bring under control any well over
which control has been lost. The lessee shall: (1) in
wells capable of flowing oil or gas, when requi
the supervisor, install and maintain in operating co
tion storm chokes or similar subsurface safety devic
(2) for producing wells not capable of flowing oil or
gas, install and maintain surface safety valves with
automatic shutdown controls; and (3) periodically t
or inspect such devices or equipment as prescribed by
the supervisor.

The operator shall comply with the following requirement
from the requirements specified in this Order shall be subject to approval
pursuant to 30 CFR 250.12(b). Applications for approval under the
visions of this Order shall be submitted to the appropriate D
References in this Order to approvals, determinations, o
to those given or made by the Supervisor or his delegated

1. Installation. All new and existing tubing installations
hydrocarbon-bearing zones shall be equipped with
controlled or a surface-remotely controlled subsu
safety device, to be installed at a depth of 100 feet or more
below the sea floor unless, after application and
the well is determined to be incapable of flowing oil or g
These installations shall be made as required in subp
and B below within two (2) days after stabilized produ
established, and during this period of time the well sh
left unattended while open to production.

A. New Wells. Tubing installations in wells completed after December 1, 1972, shall be equipped with a surface- or other remotely controlled subsurface safety device; provided, that wells with a shut-in tubing pressure of 4,000 psig or greater shall be equipped with a subsurface safety device in lieu of a surface- or other remotely controlled subsurface safety device unless a surface- or other remotely controlled subsurface safety device is required. When the shut-in tubing pressure declines below 4,000 psig, a surface- or other remotely controlled subsurface safety device shall be installed when the tubing is first removed and reinstalled.

B. Existing Wells. All tubing installations in wells completed prior to the date of this Order shall be equipped with a surface- or other remotely controlled subsurface safety device when the tubing is first removed and reinstalled; provided, that wells with a shut-in tubing pressure of 4,000 psig or greater shall be equipped with a subsurface safety device in lieu of a surface- or other remotely controlled subsurface safety device unless a surface- or other remotely controlled subsurface safety device is required. When the shut-in tubing pressure declines below 4,000 psig, a surface- or other remotely controlled subsurface safety device shall be installed when the tubing is first removed and reinstalled.

Tubing installations in existing wells completed for single well and multi-well satellite caissons or jackets and sea-floor completions may be equipped with a subsurface-controlled surface safety device, in lieu of a surface- or other remotely controlled subsurface safety device, upon application, and approval.

C. Shut-in Wells. Tubing plugs shall be installed in lieu of, or in addition to, other subsurface safety devices if a well has been shut in for a period of six (6) months. Such plugs shall be set at a depth of 100 feet or more below the sea floor. All retrievable plugs installed after the date of this Order shall be of the pump-through type. Wells perforated and completed, but not placed on production, shall be equipped with a subsurface safety device or tubing plug within two (2) days after completion.

D. Injection Wells. Subsurface safety devices as required in subparagraphs A and B above shall be installed in all injection wells unless, after application and justification, it is determined that the well is incapable of flowing oil or gas, which condition shall be verified annually.

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2. Technological Advancement. As technological research, progress, and product improvement result in increased effectiveness of safety devices or the development of new devices or systems, such devices or systems may be required or used fication, and approval. Applications for routine use shall evidence. that the device or system has been field- once each month for a minimum of six (6) consecutive that each test indicated proper operation.

3. Testing and Inspection. Subsurface safety devices shall be de signed, adjusted, installed, and maintained to insure reliable oper- ation. During testing and inspection procedures, be left unattended while open to production unless a properly oper- ating subsurface safety device has been installed in t

A. Surface-Controlled Subsurface Safety De or other remotely controlled subsurface safety dev in a well shall be tested in place for proper o stalled and thereafter at intervals not exceeding If the device does not operate properly it sh repaired, and reinstalled or replaced and proper operation.

B. Subsurface-Controlled Subsurface Safety Devices. Ea surface-controlled subsurface safety device installed shall be removed, inspected, and repaired or adjusted as nec- essary and reinstalled at intervals not exceeding six provided, that such removable devices set in a landing nipp shall be removed, inspected, and repaired or adjusted as nec- essary and reinstalled at intervals not exceeding twel months. Each velocity-type device shall be designed to clos at a flow rate not to exceed the larger of either 150 percent of, or 200 BFPD above, the most recent well-test rate which equals or exceeds the approved production rate. The above closing flow rate shall not exceed the calculated capacity o the well to produce against a flowing wellhead pressure o psig. Each preset tubing-pressure-actuated device shall be signed to close prior to reduction of the flowing wellh pressure to 50 psig.

C. Tubing Plugs. A shut-in well equipped with a tubing plug shall be inspected for leakage by opening the well to possible flow intervals not exceeding six (6) months. If liquid flow exceeds 400 cc/min., or gas flow exceeds 15 cu. f t ./rei the plug shall be removed, repaired, and reinstalled or an addi tional tubing plug installed to prevent leakage.

4. Temporary Removal. Each wireline- or pumpdown-retrievable sub- surface safety device may be removed, without further authority or

notice, *for a routine operation which does not* a ***Sundry*** **Notice** *and* **Report on** *Wells (Form 9-331) for a* ***to exceed fifteen (15) days. be clearly*** as ***being*** **without** a subsurface safety *device and shall not* ***unattended while The operation of this graph are not applicable to the testi in paragraph 3 above.***

5. ***Additional Production Equipment*** *All tubing installations* ***after the date of this Order*** *in which* ***a w*** *retrievable subsurface safety device is* ***t*** *equipped with* ***a*** *landing nipple, with flow c tective* ***equipment*** *above and below, to provide subsurface safety devices. Also, in which a subsurfa device or tubing plug is installed shall annulus packed off* ***above the*** *uppermost ope The control system for all surface-con vices shall be an* ***integral*** *part of the platform of an independent remote shut-in system*

6. *Departures.* *All departures (or waivers) approve of this Order are hereby terminated* ***as of December 1, 1972,*** **new applications** *are* **submitted prior to that date.** *All such new applications will be considered for approval pursuant* **to** *250.12(b) and the requirements of this Order. All appl departures shall include* ***a detailed*** *statement of* **the well** *con tions, efforts made to overcome any difficulties, and* **ternate safety measures.**

7. *Emergency Action.* *All tubing installations open to hydrocarb bearing zones and not equipped with* ***a*** *subsurface safety permitted by* **this** *Order* **shall** *be clearly identified* **as not being** *equipped, and a subsurface* **safety** *device or tubing plug sha* **available** *at* **the** *field* **location.** *In the event of an emergency, such as an impending hurricane, such device or plug shall promptly installed within the limits of practicability, sideration being given to personnel safety.*

8. *Records.* *The operator shall maintain the following records minimum period of one year for each subsurface safety de tubing plug installed, which records shall be available authorized representative of the Geological Survey.*

   A. *Field Records.* *Individual well records shall be maintained or near the field and shall include,* ***as a*** *minimum, the* ***ing information:***

      (1) A record which will give design and other inform i.e., make, model, type, spacers, bean and spring pressure, etc.

(2) Verification of qualifications of assembly person in char of installing the device and installation

(3) Verification of setting depth and all as required in this order.

(4) Removal date, reason for removal, and

(5) A record of all modifications of design

(6) All mechanical failures or malfunctions, including sand-cutting, of such devices, with notation as to cause probable cause.

(7) Verification that a failure report wa

B. Other Records. The following records, as a minimu maintained at the operator's office:

(1) Verified design information of subsurface-controll surface safety devices for the individual well.

(2) Verification of assembly and installation according t design information.

(3) All failure reports.

(4) All laboratory analysis reports of failed or damaged part

(5) Quarterly failure-analysis report.

9. Reports. Well completion reports (Form 9-330) and any subsequen reports of workover (Form 9-331) shall include the type and depth of the subsurface safety devices and tubing plugs in in the well or indicate that a departure has been granted.

To establish a failure-reporting and corrective-action prog a basis for reliability and quality control, each operator s submit a quarterly failure-analysis report to the office of the Supervisor, identifying mechanical failures by lease and we and model, cause or probable cause of failure, and action taken correct the failure. The reporting period shall begin the first day of the month following the date of this Order. The first report

shall be submitted by February 28, May 3
for the periods ending January 31, April
of each year.

Robert F. Evans
Supervisor

Approved June 5, 1972

Russell G. Wayland
Chief, Conservation Division

UNITED STATES
DEPARTMENT OF THE INTERIO
GEOLOGICAL SURVEY
CONSERVATION DIVISION
GULF OF MEXICO AREA

OCS ORDER NO. 6
Effective August 28, 1969

COMPLETION OF OIL AND GAS WELLS

This Order is established pursuant t
250.11 and in accordance with 30 CFR Any 250.92 departures from
quirements specified in this Order must be approved pursuant t
250.12(b).

1. Wellhead Equipment and Testing

A. Wellhead Equipment. All completed wells shal
with casingheads, wellhead fit
with a rated working pressure equal to c
surface shut-in pressure conditions and wells
shall be designed and installed to perm
between any two strings of casing. Two master valves shall be
installed on the tubing in wells with a s
excess of five thousand pounds per square inch.
connections shall be assembled and test
tion, by a fluid pressure which shall be eq
test pressure of the fitting to be insta

B. Testing Procedure. Any wells showing sustained
the casinghead, or leaking gas or oil be
casing and the next larger casing string,
the following wells shall be killed with
mud and pump pressure applied. Should the pressure at the
casinghead reflect the applied pressu
condition, after corrective measures have be
casing shall be tested in this. Testing pro-
cedure shall be used when the pressure cann
determined otherwise.

2. Storm Chloke complsehtaeldl wells the requirement
scribed in OCS Order No. 5

3. Procedures for Multiple or Tubingless Completions.

A. Multiple Completions.

(1) Information shall be submitted on, or attached to, Form 9-331 showing top and bottom of all zones proposed for completion or alternate completion, including a partial electric log and a diagrammatic sketch showing such zones and equipment to be used.

(2) When zones approved for multiple completion become intercommunicatad the lessee shall immediate y repair and separate the zones after approval is obtained.

B. Tubingless Completions.

(1) All tubing strings in a multiple completed well shall be run to the same depth below the deepest producible zone.

(2) The tubing string (s) shall be new pipe and cemented with a sufficient volume to extend a minimum of 500 feet above the uppermost producible zone.

(3) A temperature or cement bond log shall be run in all tubingless completion wells where lost circulation or other unusual circumstances occur during the cementing operations.

(4) "Information shall be submitted on, or attached to, Form 9-331 showing the top and bottom of all zones proposed for completion or alternate completion, including a partial electric log and a diagrmmatic sketch showing such zones and equipment to be used.

Robert F. Evans
Supervisor

Approved: August 28, 1969

Russell G. Wayland
Chief Conservation Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
GULF OF MEXICO AREA

OCS 7 ORDER NO.
Effective August 28, 1969

POLLUTION AND WASTE D

This Order established pursuant to 250.11 and in accordance with 30 CFR 2 follows:

(a) The lessee shall not pollute la aquatic life of the sea or a and damage any mineral- or wa lessee shall dispose of all liquid materials as prescribed by the supervis leakage of oil or waste materials shall b lessee and, upon request of the supervis to him. All spills or leakage of a subs quantity, as defined by the superv or quantity which cannot be imme be reported by the lessee without delay to the Coast Guard and the Regiona Water Pollution Control Director and the of oil or waste materials of a size or quant the designee under the pollution be reported by the lessee without

(b) If the waters of the sea are pollute duction operations conducted by or such pollution damages or threate life, or public or private property of the pollutant, wherever from shall be at the expense of the lessee to control and remove the cooperation with other appropria and local governments, or in coop shall have the right to accomplish pollutant in accordance with an combating oil spills or by other means at the cost of the lessee. Such action shall not relieve the provided herein.

(c) The lessee's liability to third parties, other up the pollutant in accordance be governed by applicable law.

The operator shall comply with the following from the requirements specified in to 30 CFR 250.12 (b).

1. Pollution Prevention. Three copies of all oil operations, the operator shall the Gulf of Mexico or shall comp pollution prevention requir

A. Liquid Disposal.

(1) Oil in any form shall not be d of the Gulf.

(2) Liquid waste materials con harmful to aquatic life or w reamer to life or property, shall b posal of harmful substances int

(3) Drilling mud containing oil s the Gulf. Drilling mud containing toxic be neutralized prior to disposal.

B. Solid Waste Disposal.

(1) Drill cuttings, sand, and other s shall not be disposed of into the Gulf un been removed.

(2) Mud containers and other solid waste incinerated or transported to shor

C. Production Facilities.

(1) All production facilities, such as separat treaters, and other equipment, shall be suc essary to control the maximum anti production of oil, gas, and sulphur, tained at all times in a manner necessary to lution.

(2) All platforms and structures shall by drains to a collecting tank or sump or equivalents, are placed under equi pollutant may spill into the Gulf, and p sump.

(3) The operator's pensonnel shall be thor
in the techniques of equipment maintenance and
for the prevention of pollution. Non
shall be informed in writing, prior to
tracts, of the operators obligations to prevent pollu
tion.

2. Inspections and Reports. The operator shall comply with the fo
lowing pollution inspection and reporti

A. Pollution Inspections.

(1) Manned facilities shall be inspected daily.

(2) Unattended facilities, including thos
mote control and monitoring systems, shall b
at frequent intervals. The district engineer may pr
scribe the frequency of inspections f

B. Pollution Reports.

(1) All spills or leakage of oil and liquid pol
be recorded showing the cause, size of spi
taken, and the record shall be maintain
for inspection by the supervisor. All s
of less than 15 barrels shall be reported to the
engineer when requested by him.

(2) All spills or leakage of oil and liquid
to 50 barrels shall be reported orally t
engineer without delay and shall be confirmed in writ

(3) All spills or leakage of oil and liquid p
substantial size or quantity, which is
than 50 barrels, and those of any size or quan
cannot be immediately controlled, shal
orally without delay to the supervisor,
engineer, the Coast Guard, and the Regio
Federal Water Pollution Control Adm
reports shall be confirmed in writing.

(4) Operators shall notify each other upon obs
equipment malfunction or pollution r
another operation.

3. Control and Removal.

A. Corrective Measures. Immediate corrective action shall be
in all cases where pollution has occurred. Each operator
shall have an emergency plan for initiating cor

to control and remove pollution and such plan shall be with the supervisor. Corrective action taken under the pla shall be subject to modification when directed by visor.

B. Equipment. Stand by pollution control equipment shall be main tained by or shall be immediately available to ea at a land base. This equipment shall include con tainment booms, skimming apparatus, and approved che persants and shall be available prior to the comm operation. The equipment shall be regularly inspecte maintained in good condition. The equipment and the location of land bases shall be approved by the The operator shall notify the supervisor of the l which such equipment is located for operations cond for each lease. Alease changes in location and equipment ma tained at each location shall be approved by the supe

Robert F. Evans
Supervisor

Approved: August 28, 1969

Russell G. Wayland
Chief, Conservation Division

UNITED STATES
DEPARTMEnT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATIN DIVISION
GULF OF MEXICO AREA

OCS ORDER NO. 8
Effective October 30, 1970

PLATFORMS AND STRUCTURES

This Order is established pursuant to the a
250.11 and in accordance with Section 30 CFR 250.19(a)
as follows:

(a) The Supervisor is authorized to appro
features, and plan of installation of a
structures, and artificial islands as a
granting of a right of use or easement u
and (b) of Section 250.18 or authorized
issued or maintained under the Act.

The operator shall be responsible for com
this Order in the installation and operation of all platforms,
mobile structures, and artificial islands, including all
stalled on a platform or structure whether or not operated or
operator. Any departures from the requirements specified in this
must be approved pursuant to 30 CFR 250.12(b).

1. The following requirements are applicable to all pla
and installed subsequent to the effective date of this
to all platforms when structural and equipment modifica
to be made:

A. General Design. The design of platforms, fixed structures
and artificial islands shall include consideration
factors as water depth, surface and subsurface soil
tions, wave and current forces, wind forces, total equipment
weight, and other pertinent geological, geographi
mental and operational conditions.

B. Application. The operator shall submit, in duplicate, the
lowing to the appropriate District Office for appro

(1) Design Features. Information relative to design featur
on an 8" 10 1/2" plat or plats showing the platform dimen
sions, plan and two elevations, number and locatio
well slots, and water depth. In addition, the plat shall
include:

(a) Nominal size and thickness range of

(b) Nominal size and thickness range of

(c) Nominal size and thickness range of

(d) design piling penetration.

(e) Maximum bearing and lateral load per

(f) Identification data which shall be block number, area, and operator.

(g) The following certification signed title of the company representati

"Operator certifies that this platform has been certified by a registered sional engineer and that the structure be constructed, operated, and mai described in the application, and proved modification thereto. C plans are on file at."

(2) Non-design Information relative to non-design features including the following:

(a) Primary use intended, including drilling, prod of oil and gas, sulphur, or salt.

(b) personnel and personnel transfer facilities in living quarters, boat landings, and heliport.

(c) Type of deck, such as steel or wood, and whether coated with protective material.

(d) Method of protection from corrosion.

(e) Production facilities including separators, treaters, storage tanks, compressors, line pumps, and met devices, except that when initially designed and utilized for drilling, this information may be su mitted prior to installation.

(f) Safety and pollution control equipment and feat

(g) Other information when required.

c. Certified Detailed structural plans certified by a reg istered professional engineer shall be on file and main by the operator or his designee.

2. **Safety and Pollution Control E**

A. **The following requirements sh**
Operators of platforms install
of this Order shall comply with the
graphs (l)(a) through (f), (2),
with subparagraphs (1) (g) and
subparagraphs (5), (6), (7), (8,
from the effective date of this

(1) The following shut-in devi
maintained in an operating **condit**
vessels and water separatio
and separation The facilities or
shall submit records to the
semi-annually showing the p
of each device including dat
testing, **repairing, adjustment**

(a) All separators shall be eq
sure shut-in sensors, low le
a relief valve and high liquid level cont
shall be installed when the ve
a **flare.**

(b) All pressure surge tanks s
high and low pressure shut-in sensor
shut-in control, flare line, and **rel**

(c) Atmospheric surge tanks shall be
level shut-in sensor.

(d) All other hydrocarbon handling
be equipped with high-low pressur
high-level shut-in controls, and
unless determined to be otherwise

(e) Pilot-operated pressure relief valves shall be
equipped to permit testing with an **external press**
source. Spring-loaded pressure relief valves shall
either be bench-tested or equipped to permit testing
with an external pressure source. A relief valve
shall be set no higher than the designed working pressure **of the vessel. The high pressure shut-in sensor**
shall be set **no higher** than **5% below the** rated or designed working pressure and the low pressure shut-in sensor shall be set no lower than 10% below the lowest **pressure in the operating pressure** range **on all**
vessels with a rated or **designed working pressure** of **more than** 400 **psi. On lower pressure vessels the**

above percentages shall be used as guidelines for sensor settings considering pressure and operatin conditions involved; except thatsensor settings sh not be within 5 psi of the rated or designed working pressure or the lowest pressure in the operating pre sure range.

(f) Allsensors shall be equipped to permit testing with an external pressure source.

(9) All flare lines shall be equipped with a scrubber or similar separation equipment.

(2) The following remote and local automatic shut-in devic shall be installed and maintained in an operating condition at all times when the affected well (or wells) is producing. The operator shall submit records to the appropriate District Office semi-annually showing the present status and past history of each such device including dates and details of inspection, testing, re ing, adjustment, and reinstallation.

(a) **All wellhead assemblies shall be equipped with an** automatic fail-close valve. Automatic safety valves temporarily out of service shall be flagged.

(b) All flowlines from wellheads shall be equipped with **high-low pressure sensors located close** to the wellhead The pressure sensors shall be set to activate the wellhead valve in the event of abnormal pressure in the flowline.

(c) All headers shall be equipped with check valves on the individual flowlines. The flowline and valves from each well located upstream of, and including, the header valves shall withstand the shut-in pressure of that well, unless protected by a relief valve with connections to bypass the header. If there is an inlet valve to a separator, the valve, flowline, and all equipment upstream of the valve shall also withstand shut-in wellhead pressure, unless protected by a relief valve with connections to bypass the header.

(d) All pneumatic shut-in control lines shall be equipp with fusible material at strategic points.

(e) Remote shut-in controls shall be located on the heli copter deck and all exit stairway landings, includi

at least one on each bestThe testing controls shall be quick-opening valves.

(f) All pressure sensors shall be tested for proper pressure settings monthly for at least four months. At such time as the monthly results are consistent, a quarterly test shall be required for at lease one yearIf these results consistent, longer period of time between testing may then be approved by the SupervisorIn the event any testing sequence reveals inconsistent results, the monthly testing sequence shall be reinstituted. Results of all tests shall be recorded and maintained in the field.

(g) All **automatic** wellhead **safety valves** shall be testedfor operation Weekly automatic wellhead safety valves shall be testedpressure holding monthly. If these results are consistent, a longer period of time between pressure tests, not to exceed quarterly, may then be approved by the Supervisor.In the event that any pressure testing sequence, exceeding monthly reveals inconsistent results, the monthly testing sequence shall be reinstituted. Results of all tests shall be recorded and maintained in the field.

(h) Check valves shall be tested for holding pressure monthly for at least four months. At such time as the monthly results are satisfactory, a quarterly test shall be required for at least one year. If these results are consistent, a longer period of time between testing may then be approved by the **Supervisor.** In the event any testing sequence reveals inconsistent results, the monthly testing sequence shall be reinstituted. Results of all tests shall be recorded and maintained in the field.

(i) A complete testing and inspection of the safety system shall be witnessed by Geological Survey representatives at the time production is cammenced. Thereafter, the operator shall arrange for a test every six months. The test shall be conducted when it can be witnessed by Geological Survey representatives.

(j) A standard procedure for testing of safety equipment shall be prepared and posted in a prominent place on the platform.

(3) Curbs, gutters, and drains shall be constructed in all deck **areas in a** manner necessary to collect all contaminants, unless drip pans or equivalent are placed under

equipment and piped to a sump which will automatically maintain the oil at a level sufficient to prevent discharge of oil into the Gulf waters. Alternate methods to obtain the same results will be acceptable. These systems shall not permit spilled oil to flow into the wellhead area.

(4) An auxiliary electrical power supply shall be installed to provide emergency power capable of operating all electrical equipment required to maintain safety of operati in the event the primary electrical power supply fails.

(5) The following requirements shall apply to the handling and disposal of all produced waste water discharged int the Gulf of Mexico. The disposal of waste water other than into the Gulf waters shall have the method and location approved by the Supervisor.

(a) Water discharged shall not create conditions which will adversely affect the public health or the use of the waters for the propagation of aquatic life, recreation, navigation, or other legitimate uses.

(b) Waste water disposal systems shall be designed and maintained to reduce the oil content of the disposed water to an average of not more than fifty ppm. An effluent sampling station shall be located at a point prior to discharge into the receiving waters where a representative sample of the treated effluent can be obtained. On one day each month four effluent samples shall be taken within a 24-hour period and determinations shall be made on the temperature, suspended solids, settleable solids, pH, total oil content, and volume of sample obtained. Samples shall be taken and all analyses for oil content shall be performed in accordance with the American Society for Testing and Materials test "Oil in Water," D1346, Oil Content of Water. The Supervisor may approve different methods for determination of oil content if the method to be used is indicated to be equivalent. No effluent containing in excess of one hundred ppm of total oil content shall be discharged into the Gulf of Mexico. A written report of the results shall be furnished to the Regional Office annually. The report shall contain dates, time and location of sample, volumes of waste discharge on the date of sampling in barrels per day, and the results of the specific analysis and physical observations.

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(6) A firefighting system shall be instilled and maintained in an operating condition in accordance with the following:

(a) A fixed autamatic water spray system shall be installed in all insdequately ventilated wellhead areas as these areas are defined in Paragraph 9 API RP 500A. These systems shall be installed in accordance with the most current edition of National Fire Protection Association's Pamphlet No. 15.

(b) A firewater system of rigid pipe with fire hose stations shall be installed and may include a fixed water spray system. Such a system shall be installed in a manner necessary to provide needed protection in areas where production handling equipment is located. A firefighting system using chemicals may be considered for installation in certain platform areas in lieu of a firewater system in that area, if determined to provide equivalent fire protection control.

(c) Pumps for the firewater systems shall be inspected and test -operated weekly. A record of the tests shall be maintained in the field and submitted semi-annually to the appropriate District Office. An alternate fuel or power source shall be installed to provide continued pump operation during platform shutdown unless an alternate firefighting system is provided.

(d) Portable "fire extinguishers shall be located in the living" quarters and in other strategic areas.

(e) A diagram of the firefighting system showing the location of all equipment shall be posted in a prominent place on the platform and a copy submitted to the appropriate District Office.

(7) An automatic gas detector and alarm system shall be installed and maintained in an operating condition in accordance with the following:

(a) Gas detection systems shall be installed in all enclosed areas containing gas handling facilities or equipment and in other enclosed areas which are classified as hazardous areas as defined in API RP 500 and the most current edition of the National **Electric Code.**

(b) All gas detection systems shall be capable of continuously monitoring for the presence in the areas in which the detection devi cated.

(c) The central control shall be capable alarm at some point below the lower of 1.3% as shown in the Bureau of Mines No. 5 This low level shall be for alarm only.

(d) A high level setting of not more than 4.9% s used for shut-in sequences and the o gency equipment.

(e) An application for the installation of any gas detection system shall be filed appropriate District The applic for a cats shall include the following:

(i) Type, location, and number of det sampling heads.

(ii) Cycling, noncycling, and frequ

(iii) Type and kind of alarm including equipment to be activated.

(iv) Method used for detection of com

(v) Method and frequency of calibration.

(vi) A diagram of the gas detection system.

(vii) Other pertinent information.

(f) A diagram of the gas detection system showing the lo cation of all gas detection points shall be posted in a prominent place on the platform.

(8) The following requirements shall be applicable to electrical equipment and systems installed:

(a) All engines shall be equipped with low-tension igni tion systems containing rigid connections and sh wiring which shall prevent the release of sufficient electrical energy under normal or abnormal conditions to cause ignition of a combustible mixture.

(b) *All electrical generators, motors, and lightin tems shall be installed, protected, and maint accordance with* the *most current edition of the National Electric Code and API RF 500A and B, as appropriate.*

(c) *Marine-armored metal-clad cable may be sub- stituted for conduit in* any area.

(9) *Sewage disposal systems shall reinstalled and us* cases *where sewage is discharged into the Gulf of M Sewage is defined as human body wastes and the wa toilets and other receptacles intended to receiv body* wastes. *Following* sewage treatment, the effluent shall *contain 50 ppm or less of biochemical oxygen (BOD), 150 ppm or less of suspended solids, and sh a minimum chlorine residual of 1.0 mg/liter after mum retention time of fifteen minutes.*

B. B. The requirements of subparagraphs *2.A(3), (4), (8), and (9) shall apply* to all mobile *drilliny* structures *used to conduct drilling or workover operations on Federal leases in of Mexico.*

Robert F. Evans
Robert F. Evans
Supervisor

Approved: October 30, 1970

Russell G. Wayland
Russell G. Wayland
Chief, Conservation Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
GULF OF MEXICO AREA

OCS ORDER NO. 9
Effective October 30, 1970

OIL AND GAS PIPELINES

This Order is established purstuant to the authority presc
250.l1 and in accordance with 30 CFR 250.19(b). Section
vides as follows:

(b) The Supervisor is authorized to approve the design,
features, and plan of installation of all pipelines
which a right of use or easement has been granted unde
Paragraph (c) of Section 250.18 or authorized under
lease issued or maintained under the Act, including those
portions of such lines which extend onto or traverse areas
other than the Outer Continental Shelf.

The operator shall comply with the following requirements. Any departures from the requirements specified in this Order must be approved pursuant to 30 CFR 250.12(b).

1. General Design. All pipelines shall be designed and maintained in accordance with the following:

A. The operator shall be responsible for the installation of the following control devices on all oil and gas pipelines connected to a platform including pipelines which are not operated or owned by the operator. Operators of platforms installed prior to the effective date of this Order shall comply with the requirements of subparagraphs (1) and (2) within six months of the effective date of this Order. The operator shall submit records semi-annually showing the present status and past history of each device, including dates and details of inspection, testing, repairing, adjustment, and reinstallation.

(1) All oil and gas pipelines leaving a platform receiving production from the platform shall be equipped with a high-low pressure sensor to directly or indirectly shut-in the wells on the platform.

b

(2) (a) All oil and gas pipelines delivering production production facilities on a platform shall be equ with an automatic shut-in valve connected to the p form's automatic and remote shut-in system.

(b) All oil and gas pipelines coming onto a platform be equipped with a check valve to avoid backflow.

(c) Any oil or gas pipelines crossing a platform which not deliver production to the platform, but which or may not receive production from the platform, shall be equipped with high-low pressure sensors to activat an automatic shut-in valve to be located in the up- stream portion of the pipeline at the platform. The automatic shut-in valve shall be connected to either the platform automatic and remote shut-in system or an independent remote shut-in system.

(d) All pipeline pumps shall be equipped with high- pressure shut-in devices.

B. All pipelines shall be protected from loss of metal by sion that would endanger the strength and safety of the li either by providing extra metal for corrosion allowance some means of preventing loss of metal such as protecti ings or cathodic protection.

c. All pipelines shall be installed and maintained to be with trawling operations and other uses.

D. All pipelines shall be hydrostatically tested to 1.25 designed working pressure for a minimum of 2 hours prior placing the line in service.

E. All pipelines shall be maintained in good operating c at all times and inspected monthly for indication of leak using aircraft, floating equipment, or other methods. Re- ords of these inspections including the date, methods, sults of each inspection shall be maintained by the pi operator and submitted annually by April 1. The pipeline op- ator shall submit records indicating the cause, effect, and remedial action taken regarding all pipeline leaks within week following each such occurrence.

F. All pipelines shall be designed to be protected against currents, storm scouring, and soft bottoms and other environmental factors.

2. Application. The operator shall submit in duplicate the following to the Supervisor for approval:

A. Drawing on 8" x 10½" plats or plats showing the major features and other pertinent data (1) including depth, (2) route, (3) location, (4) length, (5) connecting facilities, (6) and (7, burial depth, if buried.

B. A schematic drawing showing the following pipeline safety equipment and the manner in which the equipment functions: (1) High-low pressure (2) automatic shut-in valves, and (3) check valves.

c. General information concerning the pipeline including the following:

(1) Product or products to be transported by the pipeline.

(2) Size, weight, and grade of the pipe.

(3) Length of line.

(4) Maximum water depth.

(5) Type or types of corrosion protection.

(6) Description of protective coating.

(7) Bulk specific gravity of line (with the line empty).

(8) Anticipated gravity or density of the product or products.

(9) Design working pressure and capacity.

(lo) Maximum working pressure and capacity.

(11) Hydrostatic pressure and hold time to which the line will be tested after installation.

(12) Size and location of pumps and prime movers.

(13) Any other pertinent informtion as the Supervisor -My prescribe.

3. Completion The operator shall notify the Supervisor when installation of the pipeline is completed and submit a drawing 8" x 10½" plats showing the location of the line as installed, accompanied by all hydrostatic test data including proc pressure, hold time, and results.

Robert F. Evans
Supervisor

Approved October 30, 1970

Russell G. Wayland
Chief, Conservation Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
GULF OF MEXICO AREA

OCS ORDER NO. 10
Effective August 28, 1969

SULPNUR DRILLING PROCEDURES

This Order is established pursuant to the authority prescri 250.11 'and in accordance with 30 CFR 250.34, 250.41, and 250. ploratory core holes for sulphur and all sulphur developmen be drilled in accordance with the provisions of this Order, development wells shall be drilled in accordance with field established by the Supervisor. Application to Drill (Form 9-331C) shall include all information required under 30 CFR 250.91 a grated casing, cementing, mud, and blowout prevention progra The operator shall comply with the following requirements. Any departures from the requirements specified in this Order must be approv 30 CFR 250.12(b).

1. Well Casing and Cementing. All wells shall be cased and cemented in accordance with the requirements of 30 CFR 250.41(a Special consideration to casing design shall be given to c for effects caused by subsidence, corrosion, and tem tion. All depths refer to true vertical depth (TVD).

   A. Drive or Structural Casing. This casing shall be set by drilling, driving, or jetting to a minimum depth of 100 fee the Gulf floor, or to such greater depth required to unconsolidated deposits and to provide hole stabili initial drilling operations. If drilled in, the drilling fluid shall be a type that **will not pollute the Gulf, and a q of cement sufficient to fill the annular space back floor must be** used.

   B. **Conductor Casing. This casing shall be set and cemented drilling into shallow formations known to conta or, if unknown,** upon encountering conductor formations. Conductor casing shall extend to a depth of not less than 350 feet more than 750 feet below the Gulf floor. A sufficient quantity of cement shall be used to fill the annular space back to the Gulf The cement may be washed out or displaced to a depth of 40 feet below the Gulf floor to facilitate casing removal upon well abandonment.

c. Caprock Casing. This casing shall be set at the top of the caprock and be cemented with a quantity of cement sufficient to fill the annular space back to the Gulf floor. Stage cementing or other cementing method shall be used to insure cement returns to the Gulf floor.

Blowout Prevention Equipment. Blowout preventers and related well control equipment shall be installed, used, and tested in a manner necessary to prevent blowouts. Prior to drilling below the conductor casing, blowout prevention equipment shall be installed and maintained ready for use until drilling operations are completed as follows:

A. Conductor Casing. Before drilling below this string, at least one remotely controlled bag-type blowout preventer and equipment for circulating the drilling fluid to the drilling structure or vessel shall be installed. To avoid formation fracturing from complete shut-in of the well, a large diameter with control valves shall be installed on the conductor casing below the blowout preventer so as to permit the diversion of hydrocarbons and other fluids; except that when the blowout preventer assembly is on the Gulf floor, the choke and kill lines shall be equipped to permit the diversion of hydrocarbons and other fluids.

B. Caprock Casing. Before drilling below this string, the blowout prevention equipment shall include a minimum of: (1) three remotely controlled, hydraulically operated, blowout preventers with a working pressure which exceeds the maximum anticipated surface pressure, including one equipped with pipe rams, one with blind rams, and one bag-type; (2) a drilling spool with side outlets, if side outlets are not provided in the blowout preventer body; (3) a choke manifold; [4] a kill line; and (5) a fill-up line.

c. Testing. Ram-type blowout preventers and related control equipment shall be tested with water to the rated working pressure of the stack assembly, or to the working pressure of the casing, whichever is the lesser, (1) when installed; (2) before drilling out after each string of casing is set; (3) not less than once each week while drilling; and (4) following repairs that require disconnecting a pressure seal in the assembly. The bag-type blowout preventer shall be tested to 70 percent of the above pressure requirements.

While drill pipe is in use ram-type blowout preventers shall be actuated to test proper functioning once each day. The bag-type blowout preventer shall be actuated on the drill pipe once each week. Accumulators or accumulators and pumps shall maintain a pressure capacity reserve at all times to provide for repeated

operation of hydraulic blowout prevention drill shall be conducted weekly for each drilling crew to ins all equipment is operational and that crews are prope to carry out emergency duties. Adjustable choke preventer tests and crew drills shall be recorded on the driller's log.

D. Other Equipment. A manual string safety valve in the open pos tion shall be maintained on the rig floor at all times drilling operations are being conducted. Separate be maintained on the rig floor to fit all pipe in the dr string. A Kelly cock shall be installed below the swivel.

3. Mud Program - The characteristics, use, and testing o drilling mud and the conduct of related drilling proce be such as are necessary to prevent the blowout of any well. Quantities of mud materials sufficient to insure well be maintained readily accessible for the use of the crew at all times. The following mud control and testing equipment requirements are a to operations conducted prior to drilling below the c

A. Mud Control. Before starting out of the hole with drill pi the mud shall be circulated with the drill pipe just off bo until the mud is properly conditioned. When coming out of the hole with drill pipe, the annulus shall be filled with fore the mud level drops below 100 feet, and a mechanic vice for measuring the amount of mud required to fill t shall be utilized. The volume of mud required to fill the hole shall be watched, and any time there is an indication bing, or influx of formation fluids, the drill pipe sh run to bottom, and the mud properly conditioned. The mud shall not be circulated and conditioned except on or near unless well conditions prevent running the pipe to

B. Mud Testing and Monitoring Equipment. Equipment shall be maintained on the drilllng platform at all times, and shall be performed daily, or more frequently as con rant.

The following mud system monitoring equipment must (with derrick floor indicators) and used throughout of drilling after setting and cementing the conductor casing:

(1) Recording mud pit level indicator to determine mud pit volume gains and losses. This indicator shall include a visual or audio warning device.

(2) Mud volume measuring device for accurately determining mud volumes required to fill the hole on trips.

(3) *Mud return indicator to determine that returns equal the pump discharge* rate.

Robert F. Evans
Robert F. Evans
Supervisor

Approved August 28, 1969

Russell B. Wayland
Russell B. Wayland
Chief, Conservation Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
GULF OF MEXICO AREA

OCS ORDER NO. 11
Effective May 1, 1974

OIL AND GAS PRODUCTION RATES, PREVENTION OF WASTE, AND PROTECTION OF CORRELATIVE RIGHTS

This Order is established pursuant to the authority prescri CFR 250.1, 30 CFR 250.11, and in accordance with all other provisions of 30 CFR and the and 250, notice appearing in the Federal Register, dated December 5, 1970 (35 F.R. 18559), to prov prevention of waste and conservation of the natural resources of t Outer Continental Shelf, and the protection of correlati This Order shall be applicable to all oil and gas wells on Fed in the Outer Continental Shelf of the Gulf of Mexico; p that it shall not apply to oil and gas wells on a lease of which lies within the disputed area referred to in paragraph 4 of the Supplemental Decree of December 20, 1971, in United States vs. Louisiana, et al., 404 U.S. 388 (1971). All departures from the requirements specified in this Order shall be subject to approval pursuant to 30 CFR 250.12(b). References in this Order to approvals, determinations, and requirements for submittal of information or applications for approval are to those granted, made, or required by the Oil and Gas Supervisor or his delegated representative.

1. Definition of Terms. As used in this Order, the following terms shall have the meanings indicated:

   A. Waste of Oil and Gas. The definition of waste appearing in 30 CFR 250.2(h) shall apply, and includes the failure to timely initiate enhanced recovery operations where such methods would result in an increase: ultimate recovery of oil or gas under sound engineering and economic principles. Enhanced recovery operations refers to pressure maintenance operations, secondary and tertiary recovery, cycling, and similar recovery operations which alter the natural forces in a reservoir to increase the ultimate recovery of oil or gas.

   B. Correlative Rights. The opportunity afforded each lessee or operator to produce without waste his just and equitable share of oil and gas from a common source of supply.

c. Maximum Efficient Rate (MER). The maximum sustainable daily oil or gas withdrawal rate from a reservoir which will permit economic development and depletion of that reservoir without detriment to ultimate recovery.

D. Maximum Production Rate (MPR). The approved maximum daily rate at which oil may be produced from a specified oil well completion or the maximum approved daily rate at which gas may be produced from a specified gas well completion.

E. Interested Party. Royalty owners and lessees, as defined in 30 CFR 250.2(f) and (g), of the lease or leases involved in a proceeding initiated under this Order.

F. Reservoir. An oil or gas accumulation which is separated from and not in oil or gas communication with any other such accumulation.

G. Competitive Reservoir. A reservoir as defined herein containing one or more producible or producing well completions on two or more leases, or portions thereof, in which the lease or operating interests are not the same.

H. Property Line. A boundary dividing leases, or portions thereof, in which the lease or operating interest is not the same. The boundaries of Federally approved unit areas shall be considered property lines. The boundaries dividing leased and unleased acreage shall be considered property lines for the purpose of this Order.

I. Oil Reservoir. A reservoir that contains hydrocarbons predominantly in a liquid (single-phase) state.

J. Oil Well Completion. A well completed in an oil reservoir or in the oil accumulation of an oil reservoir with an associated gas cap.

K. Gas Reservoir. A reservoir that contains hydrocarbons predominantly in a gaseous (single-phase) state.

L. Gas Well Completion. A well completed in a gas reservoir or in the gas cap of an oil reservoir with an associated gas cap.

M. Oil Reservoir with an Associated Gas Cap. A reservoir that contains hydrocarbons in both a liquid and a gaseous state (two-phase).

N. Producible Well Completion. A well which is physically capable of production and which is shut in at the wellhead or at the

surface, but not necessarily y connected to productio
and from which the operator plans f

2. Classification of Reservoirs.

A. Initial Classification. Each producing reservoir sha
classified by the operator, subject to approv
visor, as an oil reservoir, an oil reservoir wi
gas cap, or a gas reservoir.

(1) The initial classification of each
production is commenced subsequent to
Order shall be submitted for approval
submittal of MER data for the reservoi

(2) Each reservoir from which production
to the date of this Order shall be classified b
ator, based on existing reservoir conditi
fication shall be determined and submitted to the Super
visor within six (6) months of the date of th

B. Reclassification. A reservoir may be reclassified by
visor, on his own initiative or upon applicatio
during its productive life when adequate data
showing that such reclassification is warranted.

3. Oil and Gas Production Rates.

A. Maximum Efficient Rate (MER). The operator shall propose a
maximum efficient rate (MER) for each producing res
on sound engineering and economic principles.
the proposed or other rate, such rate shall not be exacee
except as provided in paragraph 4 of this Order.

(1) Submittal of Initial MER. Within 45 days after the date
of first production or such longer period as may be a
proved, the operator shall submit a Request for Re
MER (Form 9-1866) with appropriate supporting in

(2) Revision of MER. Operator may request a revision of
an MER by submitting the proposed revision to the Super-
visor on a Request for Reservoir MER (Form 9-1866) with
appropriate supporting information. The Operator shall
obtain approval to produce at test rates which exceed an
approved MER when such testing is necessary to substantiate
an increase in the MER.

(3) Review of MER. The MER for each reservoir will be reviewed
by the operator annually, or at such other required or ap-

proved interval. The results of the review, with all current supporting information, shall be submitted on a Request for Reservoir MER (Form 9-1866).

(4) Effective Date. The MER, or revision thereof, will be determined by the Supervisor and shown on a Request for Reservoir MER (Form 9-1866) when the MER is approved. The effective date for an initial MER shall be the first day following the completion of an approved testing period. The effective date for a revised MER shall be the first day following the completion of an approved testing period, or if testing is not conducted, the date the revision is approved.

B. Maximum Production Rate (MPR). The operator shall propose a maximum production rate (MPR) for each producing well completion in a reservoir together with full information on the method used in its determination. When an MPR has been approved for a well completion, that rate shall not be exceeded, except as provided in paragraph 4 of this Order. The MPR shall be based on well tests and any limitations imposed by (1) well tubing, safety equipment, artificial lift equipment, surface back pressure, and equipment capacity; (2) sand producing problems; (3) producing gas-oil and water-oil ratios; (4) relative structural position of the well with respect to gas-oil or water-oil contacts; (5) position of perforated interval within total production zone; and (6) prudent operating practices. The MPR established for each well completion shall not exceed 110 percent of the rate demonstrated by a well test unless justified by supporting information.

(1) Submittal of Initial MPR. The operator shall have 30 days from the date of first continuous production within which to conduct a potential test, as specified under subparagraphs 5.B and 6.B of this Order, on all new and reworked well completions. Within 15 days after the date of the potential test, the operator shall submit a proposed MPR for the individual well completion on a Request for Well Maximum Production Rate (MPR) (Form 9-1867), with the results of the potential test on a Well Potential Test Report (Form 9-1868). Extension of the 30-day test period may be granted. The effective date for any approved initial MPR shall be the first day following the test period. During the 30-day period allowed for testing, or any approved extensions thereof, the operator may produce a new or reworked well completion at rates necessary to establish the MPR. The operator shall report the total production obtained during the test period, and approved extensions thereof, on the Well Potential Test Report (Form 9-1868).

(2) Revision of MPR Increase. If necessary to test a well completion at rates above the approved MPR to determine whether the MPR should be increased, notification of to test the well at such higher rates, not to stated maximum rate during a specified be filed with the Supervisor. Such tests may commence on the day following the date of filing notification otherwise ordered by the Supervisor. If an operator determines that the MPR should be increased, within 15 days after the specified test increased MPR on a Request for Well Maxiunun Rate (MPR) (Form 9-1867), and any other available data support the requested revision, including the the potential test and the total production the test period on a Well Potential Test Report 9-1868). Prior to approval of the proposed increased MPR the operator may produce the well completion to exceed the proposed increased MPR of effective date for any approved increase first day following the test period. If increased MPR rates result in production in excess of the approved MER, this excess proof be balanced by underproduction from the provisions of subparagraph 4.B of this

(3) Revision of MPR Decrease. When the quarterly test rate an oil well completion or the semiannual test gas well completion required under subparagraph 6.C of this Order is less than 90 percent approved MPR for the well, a new reduced MPR lished automatically for that well completion equal to percent of the test rate submitted. The effective date the new MPR for such well completion shall be the first day of the quarter following the required date of submittal periodic well-test results under subparagraphs 5.C and of this Order. Also, the operator may notify the Supervisor on a Request for Well Maximum Production Rate (MPR) (Form 9-1867) of, or the Supervisor may require, a downward revision of a well MPR at any time when the well is no longer capable of producing its approved MPR on a sustained basis. This effective date for such reduced MPR for a well completion shall be the first day of the month following the date of notification.

(4) Continuation of MPR. If submittal of the results of a quarterly well test for an "oil completion or a semiannual well test for a gas well completion, as provided for in subparagraphs 5.C and 6.C of this Order, cannot be timely continuation of production under the last approved MPR

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the well may be authorized, provided an extension of time in which to submit the test results is requested an approved in advance.

(5) Cancellation. When a well completion ceases to produce, is shut in pending workover, or any other condition exists which causes the assigned MPR to be no longer appropriate, the operator shall notify the Supervisor accordingly on a Request for Well Maximum Production Rate (MPR) (Form 9-1867), indicating the date of last production from the well, and the MIX will be canceled. Reporting of temporary shut-ins by the operator for well maintenance, safety conditions, or other normal operating conditions is not required, except as is necessary for completion of the Monthly Report of Operations (Form 9-152).

c. MER and MPR Relationship. The withdrawal rate from a reservoir shall not exceed the approved MER and may be produced from any combination of well completions subject to any limitations imposed by the MPR established for each well completion. The rate of production from the reservoir shall not exceed the MER although the sum of individual well MPR's may be greater than the MER.

4. Balancing of Production.

A. **Production Variances. Temporary well production rates resulting from normal variations** and fluctuations exceeding a well MPR or reservoir MER shall not be considered a violation of this Order, and such production may be sold or transferred pursuant to paragraph 8 of this Order. However, when normal variations and fluctuations result in production in excess of a reservoir MER, any operator who is overproduced shall balance such production in accordance with subparagraph 4.B below. Such operator shall advise the Supervisor of the amount of such excess production from the reservoir for the month at the same time as Form 9-152 is filed for that month.

B. Balancing Periods. As of the first day of the month following the month in which this Order becomes effective, all reservoirs shall be considered in balance. Balancing periods for overproduction of a reservoir MER shall end on January 1, April 1, July 1, and October 1 of each year. If a reservoir is produced at a rate in excess of the MER for any month, the operator who is overproduced shall take steps to balance production during the next succeeding month. In any event, all overproduction shall be balanced by the end of the next succeeding quarter following the quarter in which the overproduction occurred. The operator shall notify the Supervisor at the end of the month in which he has balanced the production from an overproduced reservoir.

c. Shut-in for Overproduction. Any operator in an overproduction status in any reservoir for two successive quarters not been brought into balance within the balancing be shut in from that reservoir until the actual produ equals that which would have occurred under the app

D. Temporary Shut-in. In the event of storm, hurricanes. emergencies, or other conditions peculiar to offsh tions, an operator is forced to curtail or shut in produ from a reservoir, the Supervisor may, on request, makeup of all or part of this production loss.

5. Oil Well Testing Procedures.

A. General. Tests shall be conducted for not less than four consecutive hours immediately prior to the 4-hour test period, the well completion shall have produced under stab tions for a period of not less than six consecutive hour 6-hour pretest period shall not begin until after rec volume of fluid equivalent to the amount of fluids intro into the formation for measured purpose. volumes shall be adjusted to the standard conditions of 15.015 psia for all tests. When orifice meters are used, a specific gravity shall be obtained or estimated for the gas and a specific g correction factor applied to the orifice coefficient. The Supervisor may require a prolonged test or retest of a well completion if such test is determined to be necessary for the establishment of a well MPR or a reservoir MER. The Supervisor may approve test periods of less than four hours and pretest stabilization periods of less than six hours for well completions, provided that test reliability can be demonstrated under such procedures.

B. Potential Test. Test data to establish or to increase an oil well MPR shall be submitted on a Well Potential Test Report (Form 9-1868). The total production obtained from all tests during the test period shall be reported on such form.

C. Quarterly Test. Tests shall be conducted on each producing oil well completion quarterly, and test results shall be submitted on a Quarterly Oil Well Test Report (Form 9-1869). Testing periods and submittal dates shall be as follows:

Testing Period	Latest Date for Submittal of Test Results	For Quarter Beginning
September 11 - December 10	December 10	January 1
December 11 - March 10	March 10	April 1
March 11 - June 10	June 10	July 1
June 11 - September 10	September 10	October 1

There shall be a minimum of 45 days between quarterly tests for an oil well completion.

6. Gas well Testing Procedures.

A. General. Testing procedures for gas well completions shall be the same as those specified for oil well completions in paragraph 5.A except for the initial test which shall be a multi-point back-pressure test as described in paragraph

B. Potential Test. Test data to establish or to increase a gas well MPR shall be submitted on a Well Potential Test Report (Form 9-1868).

c. Semiannual Test. Test shall be conducted on each producing well completion semiannually, and test results shall be submitted on a Semiannual Gas Well Test Report (Form 9-1870).
Testing periods and submittal dates shall be as follow

Testing Period	For Submittal of Test Results	For Semi-Annual Period Beginning
June 11 - December 10	December 10	January 1
December 11 - June 10	June 10	July 1

There shall be a minimum of 90 days between semiannual tes a gas well completion.

D. Back-Pressure Tests. A multi-point back-pressure test to determine the theoretical open-flow potential of gas wells shall be conducted within thirty days after connection to a pipeline. If bottom-hole pressures are not measured, such pressures shall be calculated from surface pressures using the method, or other similar method, found in the Interstate Oil Compact Commission (IOCC) Manual of Back-Pressure Testing of gas wells. The results of all back-pressure tests conducted by the operator shall be filed with the Supervisor, including all basic data usd in determining the test results. The Supervisor may waive this requirement if multi-point back-pressure test information has previously been obtained on a representative number of wells in a reservoir.

h. Witnessing Well Tests. The Supervisor may have a representative witness any potential or periodic well tests on oil and gas well completions. Upon request, an operator shall notify the appropriate District office of the time and date of well tests.

g. Sale or Transfer of Production. Oil and gas produced pursuant to the provisions of this Order, including test production, may be sold to purchasers or transferred as production authorized for disposal hereunder.

9. **Bottom-Hole Pressure Tests.** Static bottom-hole pressure tests shall be conducted annually on sufficient key wells to establ reservoir pressure in each producing reservoir unless frequency is approved. The operator may be required to test speci wells. Results of bottom-hole pressure tests shall be within 60 days after the date of the test.

10. **Flaring and Venting of Gas.** Oil- and gas-well gas shall not be flared or vented, except as provided herein.

A. **Small-Volume or Short-Term Flaring and Venting.** Casinghead gas may be flared or vented in small volumes or without the approval of the Supervisor in the follo tions:

(1) **Vapors.** Gas vapors when gas vapors are released from storage a other low-pressure production vessels if such ga cannot be economically recovered or retained.

(2) **Emergencies.** During temporary emergency situations, such as compressor or other equipment failure, or the relie abnormal system pressures.

(3) **Well purging and Evaluation Tests.** During the unload or cleaning up of a well and during drillstem, producing, or other well evaluation tests not exceeding a period of 24 hours.

B. **Approval for Routine or Special Well Tests.** Oil- and gas-well gas may be flared or vented during routine and special well tests, other than those described in paragraph A above, only after approval of the Supervisor.

C. **Gas-Well Gas.** Except as provided in A and B above, gas-well gas shall not be flared or vented.

D. **Oil-Well Gas.** Except as provided in A and B above, oil-well gas shall not be flared or vented unless approved by the Supervisor. The Supervisor may approve an application for flaring or venting of oil-well yas for periods not exceeding one year if (1) the operator has initiated positive action which will eliminate flaring or venting, or (2) the operator has submitted an evaluation supported by engineering, geologic, and economic data indicating that rejection of an application to flare or vent the gas will result in an ultimate greater loss of equivalent total energy than could be recovered for beneficial use from the lease if flaring or venting were allowed.

E. **Content of Application.** Applications under paragraph D above for existing operations, as of the date of this Notice, shall

be filed within three months from the effective date of Order. Applications under paragraph D (2) above shall include all appropriate engineering, geologic, and economic data evaluation showing that absence of approval to flare or vent the gas will result in premature abandonment of oil and gas production or curtailment of lease development. Applications shall include an estimate of the amount and value of the gas reserves that would not be recovered if the application to flare or vent were rejected and an estimate of the total amount of oil to be recovered and associated gas that would be lost or vented if the application were approved.

11. Disposition of Gas. The disposition of all gas produced from each lease shall be reported monthly on, or attached to, Form 9-152. The report shall be submitted in the following manner:

	Oil-Well Gas (MCF)	Gas-Well Gas (MCF)
Sales		
Fuel		
*Injected		
Flared		
Vented		
Other (Specify)		
Total		

*Gas produced from the lease and injected on or off the lease.

12. Multiple and Selective Completions.

A. Number of Completions. A well bore may contain any number of producible completions when justified and approved.

B. Numbering Well Completions. Well completions made after the date of this Order shall be designated using numerical and alphabetical nomenclature. Once designated as a reservoir completion, the well completion number shall not change. Appendix A contains a detailed explanation of procedures for naming well completions.

L. Packer Tests. Multiple and selective completions shall be equipped to isolate the respective producing reservoirs. A packer test or other appropriate reservoir isolation test shall be conducted prior to or immediately after initiating production and annually thereafter on all multiply completed wells. Should the reservoirs in any multiply completed well become intercommunicative the operator shall make repairs and again conduct reservoir isolation tests unless some other operational procedure is approved. The results of all tests shall be submitted

on a Packer Test (Form 9-1871) within 30 days after the date the test.

D. Selective Completion. Completion equipment may be installed to permit selective reservoir isolation or exposure in bore through wireline or other operations. All selec pletions shall be designated in accordance with subp 12.B when the application for approval of such compl filed.

E. Commingling. Commingling of production from two or more s arate reservoirs within a common well bore may be permitted if it is determined that, collectively, the ultimate recover not be decreased. An application to commingle hydrocarbons from multiple reservoirs in common well bore shall be submitted for approval and shall include all pertinent we mation, geologic and reservoir engineering data, and diagram of well equipment. For competitive reservoirs, notice of the application shall be sent by the applicant other operators of interest in the reservoirs prior to submi the application to the Supervisor. The application shall specify the well completion number to be used for subsequen ing purposes.

13. Gas-Cap Well Completions. All existing and future wells completed in the gas cap of a reservoir which has been classified and approved as an associated oil reservoir shall be shut in until such time as the oil is depleted or the reservoir is reclassified as a gas reservoir; provided, however, that production from such wells may be approved when (1) it can be shown that such gas-cap production would not lead to waste of oil and gas, or (2) when necessary to protect correlative rights unless it can be shown that this production will lead to waste of oil and gas.

14. Location of Wells.

A. General. The location and spacing of all exploratory and development wells shall be in accordance with approved programs and plans required in 30 CFR 250.17 and 250.34. Such location and spacing shall be determined independently for each lease or reservoir in a manner which will locate wells in the optimum structural position for the most effective production of reservoir fluids and to avoid the drilling of unnecessary wells.

B. Distance from Property Line. An operator may drill exploratory or development wells at any location on a lease in accordance with approved plans; provided that no well directionally or vertically drilled and completed after the date of this Order in which the completed interval is less than 500 feet from a property line shall be produced unless approved by the Supervisor.

For **wells drilled** as vertical holes, the surface location well shall be considered as the location of the completed i val but shall be subject to the provisions of 30 CFR 250.40(b) An operator requesting approval to produce a directiona drilled well in which the completed interval is located clos than 500 feet from a property line, or approval to produce a vertically drilled well with a surface location closer th feet from a property line, shall furnish the Supervisor w letters expressing acceptance or objection from operators o offset properties.

15. Enhanced Oil and Gas Recovery Operations. Operators shall timely initiate enhanced oil and gas recovery operations for all competi tive and noncompetitive reservoirs where such oprations w result in an increased ultimate recovery of oil or gas under sound engineering and economic principles. A plan for such operations shall be submitted with the results of the annual MER review required in paragraph 3A (3) of this Order.

16. Competitive Reservoir Development. Operations and production oper- ations in a competitive reservoir may be required to be con under either pooling and drilling agreements or unitizatio ments when the Conservation Manager determines, pursuant to 250.50 and delegated authority, that such agreements are practicable and necessary or advisable and in the interest of conservation.

A. Competitive Reservoir Determination. The Supervisor shall notify the operators when he has made a preliminary determination that a reservoir is competitive as defined in this Order. An operator may request at any time that **the** Supervisor make a preliminary determination as to whether a reservoir is competitive. **The operators, within thirty (30) days of such preliminary notification or such extension of time** as approved by the Supervisor, shall advise of their concurrence with such determination, or submit objections with supporting evidence. The Supervisor will make a final determination and notify the oprators.

B. Development and Production Plans, When drilling and/or producing operations are conducted in a competitive reservoir, the operators shall submit for approval a plan governing the applicable operations. The plan shall be submitted within ninety (90) days after a determination by the Supervisor that a reservoir is competitive or within such extended period of time as approved by the Supervisor. The plan shall provide for the development and or production of the reservoir, and may provide for the submittal of supplemental plans for approval by the Supervisor.

(1) Development Plan. When competitive reservoir is still being developed or future development is contemp development plan may be required in addition to a tion plan. This plan shall include the information r quired in 30 CFR 250.34. If agreement to a joint develop- ment plan cannot be reached by the operators, each submit a separate plan and any differences may be reso in accordance with paragraph 17 of this Order.

(2) Production A Plan. Joint production plan is required fo each competitive reservoir. This plan shall include (a) the proposed MER for the reservoir, (b) the props for each completion in the reservoir, (c) the p allocation of reservoir MER for each lease involved, (d) plans for secondary recovery or pressure ma operations. In agreement to a joint production plan ca be reached by the operators, each shall submit a s plan, and any differences may be resolved in accor with paragraph 17 of this Order.

c. Unitization. When Conservation Manager shall determine conservation will be best served by unitization of a competitive reservoir, or any reservoir reasonably delineated and determined to be productive, in lieu of a development and/or production plan or when the operators and lessees involved have been unable to voluntarily effect unitization. In such cases, the Conservation Manager may require that development and/or production operations be conducted under an approved unitization plan. Within six (6) months after notification by the Conservation Manager that such a unit plan is required, or within such extended period of time as approved by the Conservation Manager, the lessees and operators shall submit a proposed unit plan for designation of the unit area and approval of the form of agreement pursuant to 30 CFR 250.51.

17. Conferences, Decisions and Appeals. Conferences with interested parties may be held to discuss matters relating to applications and statements of position filed by the parties relating to operations conducted pursuant to this Order. The Supervisor or Conservation Manager may call a conference with one or more, or all, interested parties on his own initiative or at the request of any interested party. All interested parties shall be served with copies of the Supervisor's or Conservation Manager's decisions. Any interested party may appeal decisions of the Supervisor or Conservation Manager pursuant to 30 CFR 250.81. Decisions of the

Supervisor or Conservation Manager shall rennin in effect not be suspended by reason of any appeal, except as provided that regulation.

J. B. Lowenhaupt
Oil and Gas Supervisor
Production Control
Gulf of Mexico Area

Approved: May 1, 1974

Russell G. Wayland
Chief, Conservation Division

APPENDIX A

Subparagraph 12, "Numbering Well Completions," states: "Completions made after the date of this Order shall be designated using numerical nomenclature. Once designated as a reservoir completion, completion number shall not change..."

The intent of this subparagraph is not necessarily to change well completion names but to change the method of naming completions after the effective date of this Order in order to insure that a completion in a given reservoir and a specific well bore will have a unique name and will retain that name thereafter permanently. For further clarification, the following guidelines and examples are offered:

1. Each well bore will have a distinct, permanent number.
2. Each reservoir completion in a well bore will have a permanent designation which includes the well bore number in its nomenclature.
3. For the purpose of this subparagraph, a "completion" is all perforations in a given reservoir in a specific well bore and is not necessarily associated with a tubing string or strings.
4. If more than one completion is made in a well bore, an alphabetical suffix must be used in the nomenclature to differentiate between completions.
5. An alphabetical prefix may be utilized to designate the platform from which the well will be produced.

Example No. 1: The first well drilled from the A Platform is a single completion.

Well No. A-1

(Should an operator wish to use an alphabetical suffix with a single completion, he may do so.)

Example No. 2: A well drilled by a mobile rig need not carry an alphabetical prefix.

Well No. 1

(If the well is later connected to and produced from a production platform, the well shall be redesignated to reflect an alphabetical prefix.)

Example No. 3: The second well drilled from the A Platform is a tri completion.

First Completion — Second Completion — Third Completion

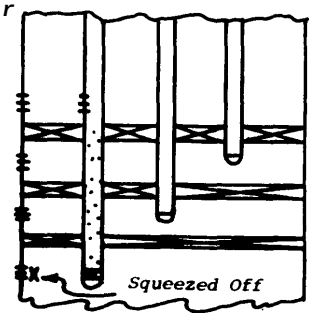
A-2 — A-2-D — A-2-T

(In the above example, the letters "D" and "T" were used in naming the second and third completions utiliz current industry practice, although the intent is not t restrict operators to the use of these particular alphabetical suffixes. Any alphabetical suffix may be used as long as it is unique to the completion in that reservoir.)

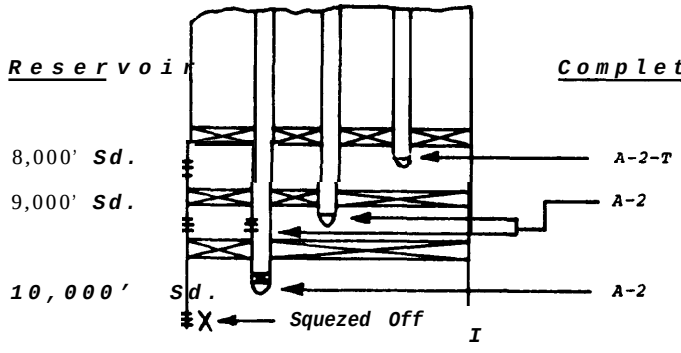
Example No. 4: The drawing is shown to illustrate the fact that once completion in a specific well bore is designated in given reservoir, it will retain that name permanently. Let us consider the A-2 completion shown in Example No. 3. Should a recompletion be made in a different reservoir at a later date, it shall be renamed; however, the production from the reservoir associated the original A-2 completion will always be identi with the A-2 completion. Once the A-2 completion in the 10,000' sand is squeezed and plugged off and the recompletion made to the 7,000' sand, the completion in the 7,000' sand would be designated A-2-A (or some other alphabetical suffix other than the "D" or "T" presently associated with other completions in the 9,000' and 8,000' sands).

The Sundry Notices and Reports on Wells (Form 9-331) submitted to obtain approval for the workover shall be the vehicle for naming the new completion.

Reservoir	Completion Name
7,000' Sd.	A-2-A
8,000' Sd.	A-2-T
9,000' Sd.	A-2-D
10,000' Sd.	A-2



Example No. 5 *If the A-2 completion in Example No. 4 had been completed from the 10,000' sand to the 9,000' (where the A-2-D is currently completed), the pletion would still be named A-2-D as both tub strings would be considered one completion fo poses of this Order.*



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
GULF OF MEXICO AREA

OCS ORDER NO. 12
Effective August 13, 1971

PUBLIC INSPECTION OF RECORDS

This Interim Order is a substantially prescribed 30 CFR 250.11 and in accordance with 30 CFR 250.97 of 30 CFR provides as follows:

> Public Inspection of Records: Geological and geophysical interpretations, maps, and data required to be submitted under this part shall not be available for public inspection without the consent of the lessee so long as the lease remains in effect or until such time as the supervisor determines the release of such information is required and necessary for proper development of the field or area.

Section 2.2 of 43 CFR provides in part as follows:

> Determinations as to Availability of Records: Section 552 of Title 5, U.S. Code, as amended by Public Law 90-23 (the act codifying the "Public Information Act") requires that identifiable agency records be made available for inspection. Subsection (b)[1] of section 552 exempts several categories of records from the general requirement but do not require the withholding from inspection of all records which may fall within the categories exempted. Accordingly, no request made of a field office to inspect a record shall be denied unless the head of the office or such higher field authority as the head of the bureau may designate shall determine (1) that the record falls within one or more of the

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[1] subsection (b) of section 552 provides that:

(b) This section does not apply to matters that are--

(4) Trade secrets and commercial or financial information obtained from a person and privileged or confidential;

(9) Geological and geophysical information and data, including maps, concerning wells.

categories exempted and (2) either that disclosure is prohibited by statute or Executive Order or that sound grounds exist which require the invocation of the exemption. A request to inspect a record located in the headquarters office or a bureau shall not be denied except on the basis of a similar determination made by the head of the bureau or his designee, and a request made to inspect a record located in a major organizational unit of the Office of the Secretary shall not be denied except on the basis of a similar determination by the head of that unit. Officers and employees of the Department shall be guided by the 'Attorney General's Memorandum on the Public Information Section of the Administrative Procedure Act" of June 1967.

(b) An applicant may appeal from a determination that a record is not available for inspection to the Solicitor of the Department of the Interior, who may exercise all of the authority of the Secretary of the Interior in this regard. The Deputy Solicitor may decide such appeals and may exercise all of the authority of the Secretary in this regard.

The operator shall comply with the requirements of this Order. Any departures from the requirements specified in this Order shall be approved pursuant to 30 CFR 250.12(b).

1. Availability of Records Filed on or after December 1, 1970. It has been determined that certain records pertaining to leases and wells in the Outer Continental Shelf and submitted under 30 CFR 250 shall be made available for public inspection, as specified below, in the Area office, Metairie, Louisiana.

   A. Form 9-152 - Monthly Report of Operations. All information contained on this form shall be available except the information required in the Remarks column.

   B. Form 9-330 - Well Completion or Recompletion Report and Log.

      (1) Prior to commencement of production all information contained on this form shall be available except Item 1a, Type of Well; Item 4, Location of Well, At top prod. interval reported below; Item 22, if Multiple Compl., How many; Item 24, Producing Interval; Item 26, Type Electric and Other Logs Run; Item 28, Casing Record; Item 29, Liner Record; Item 30, Tubing Record; Item 31, Perforation Record; Item 32, Acid, Shot, Fracture, Cement Squeeze, etc.; Item 33, Production; Item 37, Summary of Porous Zones; and Item 38, Geologic Markers.

      (2) After commencement of production all information shall be available except Item 37, Summary of Porous Zones; and Item 38, Geologic Markers.

(3) If production has not commenced after the elapsed time of five years from the date of filing Form 9-330 as required in 30 CFR 250.38 (b), all information contained on this form shall be available except Item 37, Summary of Porous Zones; and Item 38, Geologic Markers. Within 90 days prior to the end of the five-year period the lessee or operator may submit objections to the release of such information. The supervisor, taking into consideration the objections of the lessee, proximity to unleased lands, and the best interests of the United States, may determine that such information shall not be released.

c. Form 9-331 Sundry Notices and Report on Wells.

(1) When used as a "Notice of Intention to" conduct operations, all information contained on this form shall be available except Item 4, Location of Well, At top prod. interval; and Item 17, Describe Proposed or Completed Operations.

(2) When used as a "Subsequent Report of" operations, and after commencement of production, all information contained on this form shall be available except information under Item 17 as to subsurface locations and measured and true vertical depths for all markers and zones not placed on production.

D. Form 9-331C - Application for Permit to Drill, Deepen or Plug Back. All information contained on this form, and location plat attached thereto, shall be available except Item 4, Location of Well, At proposed prod. zone; and Item 23, Proposed Casing and Cementing Program.

E. Sales of Lease Production. Information contained on monthly Geological Survey computer printout showing sales of production of oil, condensate, gas and liquid products, by lease, shall be made available.

2. Filing of Reports. All reports on Forms 9-152, 9-330, 9-331, and 9-331C shall be filed in accordance with the following:

A. All reports submitted on these forms after the effective date of this Order shall be filed in two separate sets. All items on the forms in one set shall be completed in full and such forms, and all attachments thereto, shall not be available for public inspection. The additional set shall be completed in full, except that the items described in 1. (A), (B), (C), and (D) above, and the attachments relating to such items, may be excluded. The words "Public Information" shall be shown on the lower right-hand corner of this set. This additional set shall be made available for public inspection.

B. Copies of reports on these forms which were filed bet December 1, 1970, and the effective date of this Order, shall be resubmitted (in duplicate or triplicate, as provid regulations) within 30 days after the effective date of Order. These reports may exclude the items described in 1. (A), (B), (C), (D) and above, and shall show the words "Public In formation" in the lower right-hand corner and shall be made available for public inspection.

3. Availability of Records Filed Prior to December 1, 1970. Information filed prior to December 1, 1970, on the forms referred to above, is not in a form which can be readily made availab public inspection. Requests for information on these forms shal be submitted to the supervisor in writing and shall be made av in accordance with 43 CFR Part 2.

Robert F. Evans
Supervisor

Approved: August 13, 1971

Russell G. Wayland
Chief, Conservation Division

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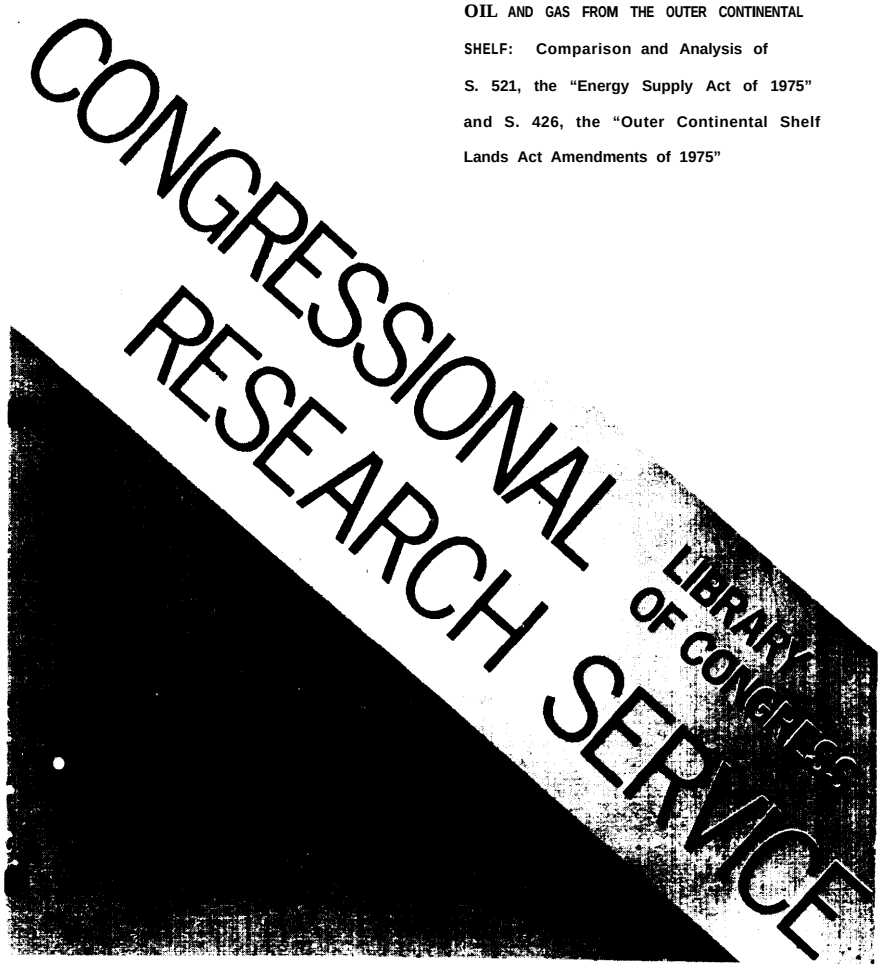
Attachment C.

Comparison and **Analysis of S. 521 and S. *426***

● HD 9560 U.S. E 75-90 SP

OIL AND GAS FROM THE OUTER CONTINENTAL SHELF: Comparison and Analysis of S. 521, the "Energy Supply Act of 1975" and S. 426, the "Outer Continental Shelf Lands Act Amendments of 1975"



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1. INTRODUCTION

The 93d Congress was and the 94th Congress will be concerned with: the demand for offshore oil and gas; the leasing policies regulating development of the outer continental shelf (OCS); the need to avoid polluting the sea; and the desire to preserve the environmental integrity of the coastal zones. Major questions concerning development of the OCS which were not answered by the 93d Congress, but which will confront the 94th Congress, include:

1. What national policies for development and exploitation of the OCS are needed?
2. What terms and conditions should govern the leasing of the OCS?
3. Should the Federal Government involve itself in a vigorous OCS oil and gas exploration or survey program?
4. Who should be liable for oil spills resulting from exploitation of the OCS?
5. What form of compensation should be given to coastal States impacted by OCS development?
6. What course of appeal has a Governor of a coastal State when aggrieved by proposed leasing action of the Secretary of the Interior?

The study contains sectional analyses of two major bills, the "Energy Supply Act of 1975" (S. 521) and "Outer Continental Shelf Lands Act Amendments of 1975" (S. 426). Only summarized and selected provisions of some sections are presented. Both of these bills provide policy guidelines for the exploration and development of the OCS. Major differences and similarities between the two bills are described. The study summarizes the Senate debate and presents selected pro and con arguments for S. 3221 of the 93d Congress which is essentially identical to S. 52l Also, comments and questions on S. 521 and S. 426 which are useful for further considerations are detailed.

II. BRIEF LEGISLATIVE HISTORY OF S. 521 and S. 426

The "Energy Supply Act of 1974" (S. 3221 of the 93d Congress), introduced by Senators Henry Jackson and Lee Metcalf, is the basis for S. 521 of the 94th Congress. Hearings on S. 3221 were held by the Senate Interior and Insular Affairs Committee on May 6, 7, 8, and 10, 1974. The bill was reported favorably out of the Committee by a vote of 10 to 5. Although the Senate passed S. 3221 on September 18, 1974, by a vote of 64 to 23, the House of Representatives did not act on companion legislation. The "Energy Supply Act of 1974, " essentially in the identical form in which it passed the Senate, was reintroduced as S. 521 in the 94th Congress on February 3, 1975, by Senator Jackson and three co-sponsors.

The "Outer Continental Shelf Lands Act Amendments of 1975" (S. 426) was introduced on January 27, 1975, by Senator Ernest Hollings and 14 co-sponsors.

111. BRIEF SUMMARY OF SIMILARITIES BETWEEN S. 426 and S. 521

Listed below are the similar and identical provisions of S. 426 and S. 521. In many instances, the appointment of the "lead agency" is the major difference between similar sections in the two bills. Provisions of the bill that are not mentioned at all in this section have major differences and will be noted in a subsequent section. Both S. 521 and S. 426 do recognize the possible impacts of OCS development on the coastal zone and the necessary assistance to the coastal States.

A. Similar Provisions

Both S. 426 and S. 521:

. . . establish similar leasing programs designed to meet national energy needs for the ten yea-r period following enactment.

. . . authorize the Secretary of the Interior to conduct similar exploration programs on the outer continental shelf.

. . . provide similar plans for the orderly development and maximum production from oil and gas leases.

. . . provide similar restrictions for geological and geophysical exploration on the OCS.

. . . authorize the Governors of the adjacent coastal States to request postponement of lease sales.

. . .provide for environmental baseline and monitoring studies and for the implementation of the National Environmental Policy Act in the preparation of environmental impact statements.

. . . have similar provisions for inspection of facilities and for the development, review, and enforcement of safety regulations.

. . . offer similar provisions for liability for oil spills and for an Offshore Oil Pollution Settlements Fund.

. . . provide for similar annual reports.

. . . offer similar provisions for research and development regarding OCS development.

. . . provide for similar studies of bidding systems,

** include similar provisions for the formation of a National Strategic Energy Reserve.

B. Identical Provisions

Both S. 426 and S. 521:

... make identical provisions for the Secretary of the Interior to dispose of federal royalty oil.

... make identical provisions for penalties and the enforcement of regulations.

... offer identical provisions for settling boundary disputes.

... include identical provisions for pipeline safety and operation as well as for review of shut-in or flaring wells.

... make identical provisions for filing civil suits.

IV. SELECTED MAJOR DIFFERENCES BETWEEN S. 426 and S. 521

1. S. 426 allows for seven bidding systems for OCS leasing; S. 521 provides for three.

2. S. 426 allows an OCS oil and gas lease to cover an area as large as necessary to comprise a reasonable, economic production unit for as long as a period of five years and under certain conditions for as long as oil or gas may be produced from the area. S. 521 limits an OCS oil and gas lease to cover a compact area not exceeding 5,760 acres for a period up to five years and under certain conditions for up to ten years or longer.

3. S. 521 contains a provision to establish a Federal Outer Continental Shelf Oil and Gas Survey Program to provide information about the probable location, extent, and characteristics of OCS oil and gas resources. Under S. 521 the Secretary of the Interior is authorized to contract for or purchase the results of a stratigraphic drilling. S. 426 allows for a Federal Outer Continental Shelf Oil and Gas Exploration program in which the Secretary is authorized to conduct or contract for such exploratory drilling as necessary to prove the presence of commercial quantities of oil or gas, extent of the field, and to obtain sufficient information concerning the geology or seabed conditions which may affect the development of the resources. Under S. 521 the Secretary of the Interior is directed to submit to Congress a plan for conducting a survey and mapping program. Under S. 426 the Secretary of the Interior and the Administrator of the National Oceanic and Atmospheric Administration (NOAA) is directed to develop jointly an implementation plan for the exploration program to be authorized at $200 million for fiscal years 1976 and 1977. The

survey program outlined in S. 521 would not be considered a major Federal action for purposes of the National Environmental Policy Act of 1969 (NEPA); however, as outlined in S. 426, the selection and determination of areas for exploratory drilling and potential leasing would be considered a major Federal action.

4. The sequence of events leading towards OCS leasing and appeal procedures to prevent OCS leasing in S. 426 and S. 521 are different.

After exploration, S. 426 requires:

-- establishment of a leasing and development plan;
- -submission of the draft plan to the Governors of certain coastal states;
--possible request for postponement of lease sales;
--submission of the plan, Governors comments and an impact statement to both houses of Congress; and
- -congressional concurrence with the plan within 90 days by the silence of both Houses or, alternatively, Congressional disapproval by resolution of either House.

S. 521 requires:

--development of a leasing program and submittal to the Congress;
- -notice of sale of each lease to the Governor of the adjacent State;
--possible request for postponement of lease sale; and
--possible appeal to the National Coastal Resources Appeals Board by Governor if aggrieved by the action of the Secretary of the Interior.

5. Under S. 426 the National Oceanic and Atmospheric Administration (NOAA) is designated the lead agency for. purposes of complying with the requirements of NEPA. Accordingly, the Administrator of NOAA is delegated many responsibilities under S. 426 which are not provided for under S. 521.

6. Under S. 521 the Secretary of the Interior and the Secretary of the Department in which the Coast Guard is operating jointly enforce the safety and environmental protection regulations promulgated under the Act. However, S. 426 assigns the U.S. Coast Guard as the lead agency for regulations and enforcement of safety and environmental

protection regulations after leasing of OCS lands.

7. S. 426 provides that the Secretary of the Department in which the Coast Guard is operating is to carry out a research and development (R&D) program designed to improve safety of operations related to exploration and development of OCS oil and gas resources. As outlined in S. 521 the Secretary of the Interior is directed to carry out a R&D program designed to improve technology related to development of the OCS oil and gas resources.

8. S. 426 contains a provision which states that any additional leasing of tracts for the purpose of developing oil and gas under the authority of the OCS Lands Act in certain areas shall cease. This moratorium shall continue until such time as the Federal Outer Continental Shelf Exploration Program is implemented in that area and until Congress has concurred with a proposed 1 easing and development program. Under S. 521 the Secretary of the Interior is directed to prepare a leasing program and submit it to the Congress within two years. After the leasing program has been approved by the Secretary, or after January 1, 1978 -- whichever comes first -- no leases maybe issued unless they are for areas included in the approved leasing program, unless the program is revised and reapproved.

9. S. 521 establishes a Coastal State Fund from which grants will be made for the purpose of assisting coastal States impacted by anticipated or actual oil and gas production to ameliorate adverse environmental effects and control secondary social and economic impacts associated with the development of certain OCS resources. S. 426 does not contain such a provision; however, a separate bill introduced by Senator Hollings provides for a similar fund.

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V. SECTIONAL ANALYSIS OF THE "ENERGY SUPPLY ACT OF 1974"
AS PASSED BY THE SENATE ON SEPTEMBER 18, 1974
[Essentially identical to S.521, 94th Congress]

A. Purpose of S. 3221

S. 3221 is a multi-purposed bill. Its major provisions seek:

1. To increase oil and natural gas production in the outer continental shelf (OCS) in order to assure material prosperity and national security, reduce dependence on unreliable foreign sources of energy, and assist in maintaining a favorable balance of payments.

2. To encourage development of new and improved technology for energy resource production that will increase human safety and eliminate or reduce risk of damage to the environment;

3. To provide States which are directly impacted by OCS exploration and development with comprehensive assistance in order to assure protection of the onshore social, economic, and environmental conditions of the coastal zone; and

4. To make oil and natural gas resources in the outer continental shelf available as rapidly as possible consistent with the need for orderly resource development, and protection of the environment, in a manner consistent with the Mining and Mineral Policy Act of 1970 and designed to insure the public a fair market return on disposition of public resources.

B. National Policy for the Outer Continental Shelf

S. 3221 establishes a national policy to guide the development and exploitation of the OCS, which should be made available for orderly development, subject to environmental safeguards, consistent with and when necessary to meet national needs. S. 3221 recognizes that development of the OCS will have significant impact on the coastal zone areas of certain

States, and that these States may require assistance in protecting their coastal zones, insofar as is possible from adverse effects of such impact.

C. Development of OCS Leasing Program

S. 3221 declares that certain OCS lands should be made available for leasing as soon as practicable. The Secretary of the Interior is directed to prepare and maintain a leasing program which shall indicate the size, timing, and location of a leasing activity that will best meet national energy needs for a ten year period.

D. Selected Features of the OCS Leasing Program Under S. 3221

1. Management of the OCS in a manner which considers all its resource values and the potential impact of oil and gas development on other resource values of the OCS and the marine environment;

2. Timing and location of leasing to distribute exploration, and development, and production of oil and gas among various areas of the OCS, considering:

--existing information concerning their geographical, geological, and ecological characteristics;

--their location with respect to, and relative needs of, regional energy markets;

--their location with respect to other uses of the sea and seabed including but not limited to fishing areas, access to ports by vessels, and existing or proposed sea lanes;

--interest by potential oil and gas producers in exploration and development as indicated by tract nominations and other representations;

--an equitable sharing of developmental benefits and environmental risks among various regions of the United States;

--timing and location of leasing so that to the maximum extent practicable areas with less environmental hazard are leased first; and

- -receipt of fair market return for public resources.

3. The Secretary of the Interior shall establish procedures for receipt and consideration of nominations for areas to be offered for lease, and shall within two years submit a proposed leasing program which shall include the reservation of an appropriate area as a National Strategic Energy Reserve to the Congress.

E. Establishment of Federal OCS Oil and Gas Survey Program

S. 3221 directs the Secretary of the Interior to conduct a survey program on oil and gas resources of the OCS, and to obtain information about the probable location, extent, and characteristics of such resources. This information is to provide a basis on which to develop a leasing program, and to promote more informed decisions regarding the value of public resources to be leased.

F. Safety Regulations for Oil and Gas Operations

S. 3221 seeks to insure that through improved techniques, maximum precautions, and maximum use of the best available technology by well-trained personnel, the safest operations in the OCS will occur. The Secretary of the Interior, with the concurrence and advice of others is directed to develop, revise, and promulgate safety regulations for operations in the OCS. S. 3221 contains a provision which states that the National Academy of Engineering shall conduct a study of the adequacy of existing safety regulations and technology, equipment, and techniques for operations in the OCS, and that it shall make recommendations for improved safety regulations.

G. Research and Development to Ireprove Technology for OCS Development

The Secretary of the Interior is, under S. 3221, directed to carry out a research and development program designed to improve technology related

to development of oil and gas resources of the OCS. Areas of investigations shall include: downhole safety devices, methods for reestablishing control of blowing out or burning wells, methods for containing and cleaning up oil spills, new or improved methods of development in water depths over 600 meters, and subsea production systems.

H. Enforcement of Safety Regulations

The Secretary of the Interior and the Secretary of the department in which the Coast Guard is operating shall jointly enforce the safety and environmental protection regulations promulgated under the Act. These regulations shall provide for:

1. physical observation at least once each year of the installation or testing of all safety~ equipment designed to prevent or ameliorate blowouts, fires, spillages, or other major accidents; and

2. periodic onsite inspection without advance notice to the lessee to assure compliance with public health, safety, or environmental protection regulations.

S. 3221 directs the Secretary of the department in which the Coast Guard is operating to make an investigation and public report on all major fires and major oil spillage occurring as a result of operations pursuant to this Act.

I. Liability for Oil Spills

S. 3221 establishes an Offshore Oil Pollution Settlements Fund as a nonprofit corporate entity which shall be administered by the holders of leases issued under regulations prescribed by the Secretary of the Interior. The holder of a lease or right-of-way issued or maintained under this Act and the Offshore Oil Pollution Settlements Fund shall be liable --

without regard to fault and without regard to ownership of any adversely affected lands, structures, fish, wildlife, or biotic or natural resources relied upon by any damaged party for subsistence or economic purposes for all damages sustained by any person as a result of discharges of oil or gas from any operation authorized under this Act under certain conditions. The provision places a limit of $100 million for all claims arising out of any one incident. The holder shall be liable for the first $7 million of such claims that are allowed. The fund which S. 3221 establishes is liable for the balance of the claims that are allowed up to $100 million. If the total claims allowed exceed $100 million they shall be reduced proportionately, and the unpaid portion maybe asserted and adjudicated under applicable Federal or State law.

A fee of 2 1/2 cents per barrel of oil, produced pursuant to any lease issued or maintained under this Act, is to be paid into the fund. Costs of administration of the fund are paid from the fund. Subject to certain **limi tations, if the fund is unable to satisfy a valid claim, it may, upon the approval of the Secretary of the Interior, borrow the money needed from any commercial credit source at the lowest available rate of interest.**

J. Coastal State Fund

S. 3221 establishes the Coastal State Fund to assist coastal States impacted by anticipated or actual oil and gas production related to the OCS. Monies from the Fund are to ameliorate adverse environmental effects and control secondary social and economic impacts from development of certain Federal energy resources in or on the OCS adjacent to the submerged lands of such states. The grants may be used for planning, construction of public facilities, and provision of public services, and

such other activities as may be prescribed by regulations promulgated by the Secretary of Commerce. Under S. 3221 the Secretary of Commerce shall establish requirements for grant eligibility and shall coordinate all grants with management programs established pursuant to the Coastal Zone Management Act of 1972. Initially, $100, 000, 000 are to be authorized to be appropriated for the fund. Subsequently, 10 per centum of the Federal revenues from the Outer Continental Shelf Lands Acts, as amended by this Act, or the equivalent of forty cents per barrel from Federal revenues from the OCS Act, whichever is greater, shall be paid into the fund, provided that the total amount paid into the fund shall not exceed $200,000,000 per year for fiscal years 1976 and 1977. Grants shall be made to impacted coastal States in proportion to the effects and impacts of offshore oil and gas exploration, development and production on such States.

K. Citizen Suits

S. 3221 contains a provision to allow for citizen suits under certain circumstances by any person having an interest which is or may be adversely affected by violation of the Act.

L. Promotion of Competition

The Secretary of the Interior is directed to publish a report with recommendations for promoting competition and maximizing production and revenues from the leasing of OCS lands. Such report shall include considerations of bidding systems, measures to ease entry of new competitors, and measures to increase energy supply to independent refiners and distributors.

M. Environmental Baseline and Monitoring Studies

Prior to permitting oil and gas drilling on any area of the outer con-

tinental shelf not previously leased under this Act, the Secretary of the Interior, in consultation with the Administrator of the National Oceanic and Atmospheric Administration, shall make a study of the area involved to establish a baseline of those critical parameters of the OCS environment which may be affected by oil and gas development. The study shall include background levels of trace metals and hydrocarbons in water, sediments, and organisms; characterization of benthic and planktonic communities; description of sediments and relationships between organisms and abiotic parameters; and standard oceanographic measurements such as salinity, temperature, micronutrients, and dissolved oxygen.

N. Revision of Lease Terms

Under existing law the Secretary of the Interior is authorized to offer (OCS) oil and gas leases on the basis of either (1) a cash bonus bid with a royalty fixed at no less than 12 1/270 of the gross revenue from the lease, or (2) on the basis of a royalty rate bid with a fixed cash bonus. Almost all OCS leases have been offered for cash bonus bids with a royalty rate fixed at 16 2/3% of the-gross value of production, since the OCS Lands Act was approved in 1953. Under the "Energy Supply Act of 1974" the bidding shall be: (1) on the basis of cash bonus bid with a royalty fixed by the Secretary at not less than 12 1/2 per centum in amount or value of the production saved, removed, or sold, (2) on the basis of a cash bonus bid with a fixed share of the net profits derived from operation of the tract of no less than 30 per centum reserved to the United States, or (3) on the basis of a fixed cash bonus with the net profit share reserved to the United States as the bid varies.

A rationale for this proposal was eludicated in the Report on S. 3221

by the Senate Committee on Interior and Insular Affairs:

> The Committee's decision to eliminate the royalty bidding alternative is based on the widespread agreement of most economists and oil industry representatives concerning the undesirable effects of royalty bidding. Specifically, the Committee believes that royalty bidding would encourage speculation, increase the likelihood of premature shutdown of production under conditions of high royalty rates, and result in reduction in petroleum output and lease revenues.
>
> However, the Committee wants to provide a lease allocation system that would encourage the widest possible participation in competitive lease sales consistent with receipt by the public of fair market value for its resources. Testimony before this Committee and elsewhere has revealed general acceptance of the proposition that high bonus bids have created a barrier to the entry of small and medium size oil firms to the OCS arena. The Committee believes that net profits share arrangements can be effective in shifting ***govern-*** ment revenue away from initial bonuses and into deferred payments made out of a leaseholders profits. 1/

Other changes in the leasing and exploration aspects of the OCS program proposed in S. 3221 were summarized in the Report of S. 3221 of the Senate Interior and Insular Affairs Committee:

> Under existing law, all OCS oil and gas leases are for a primary term of five years. As amended by section 203, Subsection 8(b) of the OCS Lands Act would permit the Secretary to issue leases with a primary term of up to ten years.
>
> The purpose of the increase in permissible maximum primary lease term is to encourage exploration and development in areas of unusually deep water or adverse weather conditions, where the five year period may be insufficient for both exploration and the mobilization of new technology called for in the event of a discovery.
>
> Section 204 further amends Section 8 of the OCS Lands Act by requiring that royalty and net profits share oil produced from all leases granted after the effective date of the amendment be offered by the Government at a competitive auction. . . 2 /

According to the Committee Report:

> The purpose of the amendment is to create a free market in crude petroleum. However, the Committee was anxious to insure, that independent refiners not be denied access to OCS crude. To this end, Section 203 directs the Secretary to limit participation in sales where

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1/ U. S. Congress. Senate. Committee on Interior and Insular Affairs. Report No. **93-1140.** Energy Supply Act of 1974. September 9, 1974. p. 21.

~/ Ibid., p. 21-22.

> such limitation is necessary to assure adequate supplies of oil at equitable prices to independent refiners. The Secretary can define the term "independent refiner" by regulation. The Committee intends that the term apply only to those refiners not part of an organization which produces crude petroleum. The Secretary could impose a size limitation in terms of refining capacity if he deemed that desirable. 3/

S. 3221 contains other revisions of OCS leasing terms, which are designed to insure maximum production from outstanding leases. It provides **that** all leases issued after S. 3221 is enacted must require that development be carried out in accordance with a development plan which has been approved by the Secretary. Failure to comply with the development plan will terminate the lease.

The development plan will set forth, in the degree of detail established in regulations issued by the Secretary, specific work to be performed, environmental protection and health and safety standards to be met, and a time schedule for performance. The development plan may apply to all leases included within a production unit.

A proposed development plan must be submitted to the Secretary within six months after the date of enactment of S. 3221 for all outstanding permits and leases. Failure to submit a development plan or to comply with an approved development plan shall terminate the lease.

According to the Senate Report on S. 3221 the Senate Interior Committee recognized that:

> . . . . . there must be some flexibility in the degree on detail required in development plans. It expects that the Secretary will require exploration activity to start within a specified time. If production is established the development plan would need to be revised. This subsection authorizes revisions of development plans if the Secretary determines that revision will lead to greater recovery of the oil and gas, improve the efficiency of the recovery operation, or is the only

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~/ Ibid., p. 22.

means available to avoid substantial economic hardship on the lesse or permittee. 4/

Holders of oil and gas leases issued pursuant to this Act shall not be permitted to flare natural gas from any well after the date of enactment of S. 3221, unless the Secretary finds that there is no practicable way to obtain production or to conduct testing or workover operations without flaring. The Senate Interior and Insular Affairs Committee maintained that unnecessary waste of this valuable natural resource must not be permitted.

S. 3221 amends Section 11 of the OCS Lands Act which authorizes the Secretary to permit geological and geophysical exploration in the Outer Continental Shelf. S. 3221 would require that all permits for such explorations contain terms and conditions designed to (1) prevent interference with actual operations under any OCS lease, (2) prevent or minimize environmental damage, and (3) would require the permittee to furnish the Secretary with copies of all data (including geological, geophysical, and geochemical data, well logs, and drill core analyses) obtained during such exploration. The Secretary must maintain the confidentiality of all data so obtained until after the areas involved have been leased or until such time as he determines that making the data available to the public would not damage the competitive position of the permittee, whichever comes later.

O. Postponement of Lease Sales

S. 3221provides that prior to the sale of each OCS lease the Governor of the adjacent States may request the Secretary to postpone such sale for

4/ Ibid., p. 23.

a period not to exceed three years following the date proposed in such notice if he determines that the sale will result in adverse environmental or economic impact or other damage to the State or residents thereof. Once presented with such a request for postponement the Secretary is given three options:

1. grant the request for postponement;

2. allow for a shorter postponement than requested, provided that such time is adequate for study, and provision to ameliorate adverse economic or environmental effects; and/allow for controlling secondary social or economic impact associated with development of Federal OCS energy resources; or

3. deny the request for postponement.

P. National Coastal Resources Appeals Board

S. 3221 creates within the Executive Office of the President the National Coastal Resources Appeals Board which shall hear appeals from the Governor of a State aggrieved by the action of the Secretary on requests for postponement of OCS lease sales. The Board can overrule the action of the Secretary if it finds that the State is not adequately protected from adverse environmental and economic impacts and other specified damages, or if the request for postponement by the Governor is consistent with the national policy expressed in S. 3221.

Q. Miscellaneous Provisions

Miscellaneous provisions of S. 3221 include:

1. A report on the adequacy of existing transport facilities and regulations to facilitate distribution of oil and gas resources of the Outer Continental Shelf;

2. A report listing all shut-in oil and gas wells and wells flaring

natural gas on leases covered by the OCS Lands Act;

3. A study on methods and procedures to implement a uniform law providing liability for damage from oil spills from OCS operations, tankers, deepwater ports, and other sources; and

4. A study to determine the feasibility of establishing a fuel stamp program to utilize coupons to assist those on low and fixed incomes in purchasing home heating fuels in the winter months.

VI. SENATE DEBATE ON S. 3221

On September 18, 1974, the "Energy Supply Act of 1974" was considered and passed by the Senate. The final bill was essentially a compromise of legislation reported out of the Senate Interior and Insular Affairs Committee and amendments offered by Senators Magnuson and Hollings on behalf of the Senate Committee on Commerce. The intent of these amendments was to bring into sharper focus the responsibilities for OCS development of the National Oceanic and Atmospheric Administration and the U. S. Coast Guard.

A major question arose over which Department would have responsibility for setting guidelines and making determinations of eligibility for grants to coastal States to reduce environmental, social, and economic impacts anticipated or caused by OCS development. Amendments offered on behalf of the Senate Committee on Commerce assigned responsibility not to the Interior Department, but to the Commerce Department, wherein, according to Senators Hollings and Magnuson, coastal zone impact grants could be made to be consistent with existing programs and policies set forth under the Coastal Zone Management Act of 1972. Senator Hollings argued that, "Needless Federal bureaucratic duplication will be avoided in the coastal zone and the responsibilities of these two [Interior and Commerce] Federal agencies will remain clear." 5/ Senator Hollings stressed that without these amendments:

> . . . existing and future coastal zone management programs may be undermined, and certainly duplication will occur. To create a separate

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5/ Hollings, Ernest F. Debate on Energy Supply Act of 1974. Remarks in the Senate. Congressional Record [daily ed.] v. 120, Sept. 18, 1974: S. 16925.

> coastal States fund without guidelines, administered by the Secretary of the Interior, could very well discourage participation in the coastal zone management program. It is quite conceivable that States, lured by the prospect of easy money, would tend to opt for larger grants from this larger OCS fund, especially since without the needed changes, there would be virtually no requirements as to how the funds would be used. Also, it would be easy to contemplate the Department of the Interior and the Department of Commerce working at cross -purposes, something that the Senate clearly sought to avoid in enactment of the Coastal Zone Management Act and in passage of the National Land Use and Policy Assistance Act. 6/

During the debate on S. 3221 Senator Fannin presented several arguments against these amendments introduced by Senators Hollings and Magnuson. He maintained that:

> . . . this is basically a coastal zone type amendment which changes the language of the bill to emphasize environmental dangers of **OCS** operations, and grants NOAA participation in administration of the Coastal States Fund.
>
> The Coastal States Fund is undesirable as far as the Senator from Arizona is concerned, and should not be adopted.
>
> I oppose this amendment. The amendment would further weaken the bill and would perpetuate an existing rivalry between NOAA and Interior regarding management of OCS programs.
>
> Mr. President, what we are trying to do in this legislation is to provide abetter method for handling the OCS leasing program in a way in which the companies that are drilling the OCS can progress without unnecessary interference.
>
> Certainly, we all want to protect the environment. We all realize the problems as far as coastal areas are concerned. That is why there is already provided in the legislation appropriate protective measures. But I feel that this is beyond reason, it is beyond need, to give that protection.
>
> I do oppose the amendment. I feel that it is detrimental rather than beneficial. I would hope that the Senate would consider it on that basis, that this is another barrier to accomplishing the objectives we have of being self-sufficient in energy. Every step we would be forced to take under this amendment delays the time in which we will be able to take care of our own needs and not be dependent upon foreign sources. 7/

However, during the. debate it was announced that Senator Jackson, Chairman of the Senate Interior and Insular Affairs Committee, had en-

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6/ Ibid., p. S. 16926.

7/ Fannin, Paul. Debate on the Energy Supply Act of 1974. Remarks in the Senate. Congressional Record. [daily ed.] v. 120, Sept. 18, 1974: S. 16928.

dorsed the Magnuson-Hollings amendments, which were eventually passed by a vote of 73-18. As the debate continued a variety of amendments were offered including:

1. An amendment offered by Senator Mathias to provide for a joint study to be undertaken by the Administrator of the Federal Energy Administration and the Secretary of the Department of Health, Education, and Welfare on a fuel stamp proposal to utilize coupons which would assist those on low and fixed income in purchasing home heating fuels in the winter months. (No opposition to this amendment was raised.)

2. An amendment offered by Senator Mathias to allow a Governor of an adjacent State to request for up to 3 years postponement of a lease sale. This amendment would allow representatives from several Federal agencies the opportunity to make the final decision on leasing of the OCS.

In opposition to this amendment Senator Johnston noted that existing law contains a delay procedure similar to that proposed by Senator Mathias. He cited provisions under NEPA (National Environmental Policy Act of 1969) which allows for certain delays, and requires public hearings and inputs on environmental alternatives or damages.

Mr. Fannin thought that the Mathias amendment would allow the States to hold up OCS leases, and that it would throw another element of doubt into the development of OCS programs.

Senator Kennedy expressed his" support and explanation of Mr. Mathias' amendment:

> . . . the pending amendment will provide essential safeguards against the leasing of offshore tracts in areas where such leasing would have adverse impacts on a State adjacent to a proposed leasing site.
>
> The amendment would permit the Governor of such a State to request the Secretary of the Interior to grant up to a 3-year postponement of a particular lease sale, based on environmental and economic impact data which would be submitted to him by the affected State.
>
> It would also permit the Governor, if his request is not granted

> by the Secretary of the Interior, to appeal to the National Coastal Resources Board, for a final decision on the validity of his request for postponement. Serving on this Board would be the Vice President, the Secretary of the Interior, the Administrator of the Environmental Protection Agency, the Chairman of the Council on Environmental Quality and the Administrator of the National Oceanic and Atmospheric Administration.
>
> For the first time, Mr. President, this would give agencies other than the Interior Department the opportunist y to review leasing decisions. A great deal of concern has been expressed by the State of Massachusetts, over the present situation in which the Interior Department is assigned responsibility for both promotion and regulation of lease sales. It would also permit States which are presently preparing comprehensive coastal zone management programs the option to request postponement of actual lease sales until their coastal zone plans have been completed. 8/

By a vote of 54-39 the Mathias amendment was agreed to.

3. An amendment offered by Senator Bartlett to increase bidding and drilling activity in the OCS, and to make it easier for smaller companies to acquire lease holds for exploration and development was agreed to.

4. Senator Bartlett also introduced an amendment to delete from the Energy Supply Act a provision to establish a Coastal State Fund which was designed to reduce social, economic, and environmental impacts of OCS development.

1n support of his amendment Senator Bartlett stated:

> This fund proposes to divert revenues from the U.S. Treasury. Such a diversion of funds would be inflationary, inequitable, and constitute a poor budgetary practice. In addition, OCS receipts belong to all the people of the country who currently receive benefits through congressional appropriation from the Treasury. Diverting these revenues for coastal States only, without requirement for need, would give coastal States windfalls and would require increased taxation to make up for diverted revenues. 9/

8/ Kennedy, Edward M. Debate on Energy Supply Act of 1974. Remarks in the Senate. Congressional Record [daily edition] Sept. 18, 1974: S. 16931.

9/ Bartlett, Dewey. Debate on Energy Supply Act of 1974. Remarks in the Senate. Congressional Record [daily edition] Sept. 18, 1974: S. 16945.

Furthermore, he stated that:

> . . . this proposed fund violates the spirit of the recently passed Congressional Budget and Impoundment Control Act of 1974 by reducing the ability of the executive and Congress to allocate funds to the highest needs. In order to balance the fiscal 1976 budget Congress, in my opinion, must decrease uncontrolled appropriations and make them controllable, so that there will be a possibility of controlling these expenditures. This section proposes to decrease the amount of controllable and actually increase the amount of uncontrollables; so it flies right in the face of the budgetary reform that was accomplished earlier this year.
>
> A need for this fund has not been convincingly presented. In fact *there is* considerable evidence that OCS activity on Federal lands is beneficial to the adjacent coastal States. For instance, Mr. Robert Kruegar, an OCS consultant to the Public Land Law Review Commission, said in testimony:
>
> > I It is very difficult to see what impact Outer Continental Shelf leasing does have on a coastal State. Some of the data we have indicated, for example in Louisiana, that the coastal State benefited economically from Outer Continental Shelf leasing."
>
> .* The impacts upon adjacent coastal States should any Federal revenue assistance be needed should be provided by existing programs for community development provided by Commerce, HEW, HUD, Agriculture, and Labor, and the EPA, not by establishing overlapping and conflicting programs. ~/

Two arguments presented to support the need for a Coastal **State** Fund were:

(1) Overwhelming data on the negative economic impacts from the drilling of OCS oil;

(2) The fund was essential not only to do equity, but to make States willing to suffer the negative impacts from offshore drilling. Senator Bartlett's amendment was defeated by a vote of 61 to 29.

9/ Bartlett. Dewev. Debate on Energy Supply Act of 1974. Remarks in the Senate. **Congressional** Record [daily edition] Sept. 18, 1974: S. 16945.

~/ Ibid., p. S. 16945.

5. Senator Tunney introduced an amendment to strengthen the provisions of the bill regarding rules and regulations which govern the safety and environmental protection of offshore drilling operations. His amendment provided that:

> It is the policy of this section to insure, through improved techniques, maximum precautions, and maximum use of the best available technology by well-trained personnel, the safest possible operations in the Outer Continental Shelf. Safe operations are those which minimize the likelihood of blowouts, loss of well control, fires, spillages, or other occurrences which may cause damage to the environment, or to property, or endanger human life or health. . . 11/

There was no major objection to the amendment.

Towards the end of the Senate debate, members of the minority party on the Senate Interior and Insular Affairs Committee led a campaign to defeat S. 3221. Senator Fannin cited a letter from Rogers C. B. Morton, Secretary of the Interior, who stated that:

> Enactment of S. 3221 would seriously disrupt current efforts to achieve full utilization of vitally needed OCS energy resources. Many of its provisions are unclear or redundant of existing law. Taken as a whole, the measure will inevitably result in reassessment and interruption of our present program, which includes a proposed leasing of 10 million acres of OCS lands in calendar year of 1975 and will involve extensive environmental safety and information developing efforts. 12/

Secretary Morton also asserted that the establishment of a Coastal States Fund Was wholly unwarranted either from the standpoint of best use of the Federal budget or fair allocation of resources among States, and that an OCS mapping and survey program would require extremely large expenditures of money without producing commensurate benefits.

11/ **Tunney,** John V. Debate on Energy Supply Act of 1974. Remarks in the Senate. Congressional Record [daily edition] Sept. 18, 1974: S. 16966.

12/ **Fannin,** Paul. Debate on Energy Supply Act of 1974. Remarks in the Senate. Congressional Record [daily edition] Sept. 18, 1974: S. 16975.

Also, Senator Fannin maintained that "

1. S. 3221 would result in a delay or reduction of OCS development and would obstruct the present program for expediting leasing and exploration of the OCS;

2. S. 3221 would' create instability and disincentives to increased production from the OCS;

3. S. 3221 would discourage private participation in OCS development because several of its sections are anticompetitive and its bidding system is restricted to limited alternatives;

4. S. 3221 would overlap and duplicate the present OCS Lands Act and provisions of S. 3221 would frustrate administrative adaptability of existing law for handling the risky, unknown, and changing conditions of oil and gas operations in the ocean environment.

5. A Federal Oil and Gas Survey of the OCS would require large sums of Federal funds, and would consume time and diverse technical expertise away from the more urgent task of selection of tracts to be offered for leasing;

Immediately preceding the final vote on S. 3221 Senator Hansen stated several additional objections including:

1. Rigidity of the provision to prohibit leasing any OCS area after January 1, "1978, which was not included in a published leasing program;

2. Section 26 of S. 3221 would constitute an express invitation to each U.S. citizen to initiate lawsuits to slow down and otherwise delay the entire OCS program;

3. There are no specifications in S. 3221 to guide the Secretary of the Interior indetermining the fair market value of any OCS oil which the Government might receive;

4. New liability laws, as proposed in S. 3221, for damages incurred through OCS operations are not necessary because of the Federal Water Pollution Control Act Amendments of 1972 and well established tort law; and

5. Failure to comply with development plans prescribed in section 206 would result in termination of an OCS lease regardless of whether such failure was caused by events beyond the control of the lessee. There is no provision in the legislation for notice of a hearing for the lessees or for a rebate of any part of the payments made for the leases.

VII. ANALYSIS OF S. 426, THE "OUTER CONTINENTAL SHELF LANDS ACT AMENDMENTS OF 1975"

S. 426, introduced by Senator Ernest F. Hollings and others on January 27, 1975, was proposed to "establish a policy for the management of oil and natural gas in the outer continental shelf; to protect the marine and coastal environment and to amend the Outer Continental Shelf Lands Act."

SECTIONAL ANALYSIS

A. Purposes of S. 426

The provisions of this Act seek to:

1. establish policies and procedures for managing the oil and natural gas resources of the outer continental shelf in order to achieve national economic goals and assure national security, reduce dependence on foreign sources, and maintain a favorable balance of payments in world trade;

2. preserve, protect, and develop oil and natural gas resources in the outer continental shelf while protecting the marine and coastal environment and insuring the public a fair return on the resources;

3. encourage development of new and improved technology for energy resource production that is safe to both humans and the environment;

4. assure that coastal States are able to participate in the policy and planning decisions relating to resource management.

B. National Policy for the Outer Continental Shelf

S. 426 recognizes the OCS as a vital national resource held by the Federal Government in trust for all the people which should be developed orderly to meet national needs and environmental safeguards. This bill also recognizes that the development of the OCS will have significant impacts on the coastal zone and that coastal States and adjacent coastal States may require assistance in protecting their coastal zones. Such States are also entitled to participate in decisions made by the Federal Government in the development of the outer continental shelf according to this bill.

C. Revision of Bidding and Lease Administration

S. 426 states that the bidding for tracts shall be by sealed bid and at the discretion of the Secretary of the Interior on the basis of:

1. cash bonus bid with a royalty fixed by the Secretary of not less than 16 2 / 3$70 in amount or value of the production saved, removed, or sold;

2. variable royalty bid based on a per cent of the production saved, removed, or sold with a cash bonus as determined by the Secretary;

3. cash bonus bidwith a diminishing or sliding royalty based on formulas determined by the Secretary that will encourage continued production, but not less than 16 2/3% in amount or value of the production saved, removed, or sold at the beginning of the lease period;

4. cash bonus bid with a fixed share of the net profits derived from operation of the tract of no less than 30% reserved for the United States;

5. fixed cash bonus with the net profit share reserved for the United States as the bid variable;

6. cash bonus with a royalty fixed by the Secretary at not less than 16 2/3% in amount or value of the production saved, removed, or sold and a per cent share of net profits derived from the production of the lease;

7. comparative performance based on a work program submitted by bidders.

S. 426 sets forth procedures for calculating the share afforded the United States and procedures by which the Secretary of the Interior may dispose of oil used as payment under the net profit sharing arrangement.

S. 426 authorizes the Secretary of the Interior to determine the size of the lease area and rental provisions and sets the initial lease period at 5 years and as long thereafter as oil or gas may be produced in paying quantities.

D. Annual Report

S. 426 provides for a comprehensive report within six months after the end of each fiscal year, submitted by the Secretary of the Interior to the President of the Senate and the Speaker of the House on the leasing and production program in the outer continental shelf.

E. Ensuring Orderly Development of Oil and Gas Leases

This bill provides that prior to the issuance of any leases, the lessee must submit a development plan which the Secretary of the Interior finds consistent with his own development plan provided for

by this Act. S. 426 also prohibits the flaring of natural gas from any well unless the Secretary determines that it is necessary for production or workover operations.

F. Geological and Geophysical Exploration

S. 426 provides that no geological or geophysical explorations may be made on the OCS without a permit issued by the Secretary of the Interior. Each permit is designed to minimize environmental damage and prevent interference with actual operations on the OCS and with other exploration being conducted by the United States. Each permittee is required by this bill to furnish the Secretary with copies of data (including geological, geophysical, and geochemical data, well logs, and drill core analyses) obtained during such exploration.

G. Outer Continental Shelf Leasing Program

S. 426 authorizes the Secretary of the Interior to prepare and maintain a leasing program which will indicate the size, timing and location of leasing activity that will best meet national energy needs for ten years following the promulgation of the program. This program would be designed to consider all economic, social, and environmental values of the resources as well as the potential impact of exploring other resources and the environment. The program will take into consideration the schedule and location of development based on certain criteria including geography, energy markets, other uses of the sea, laws, and interest in the area by producers. The program will

take into consideration the need to receive the fair market value for the resources. The program will include estimates of necessary appropriations and manpower, as well as plans to conduct geophysical exploration and environmental baseline studies, to obtain resource information, to analyze the data, and to supervise operations.

H. Federal OCS Oil and Gas Exploration Program

S. 426 authorizes the Secretary to conduct a comprehensive exploratory program to obtain resource information necessary for determining whether commercial quantities of oil and gas are present. The information should update previous data, increase competition among producers, and be available to the public. However, the Secretary shall maintain the confidentiality of all proprietary data purchased from commercial sources while not under contract with the United States Government for such period of time as is agreed to by the parties. Under this program the Secretary will keep current maps and reports concerning OCS resources while consulting with the oil and gas industry and State and local governments regarding coastal management programs being developed. This program provides for publication of information regarding proposed drilling activities and compliance with the National Environmental Policy Act of 1969. S. 426 appropriates $200,000, 000 to carry out this section during fiscal years 1976 and 1977 to the Secretary of the Interior, and also appropriates Federal agencies having responsibilities under this section.

I. Outer Continental Shelf Leasing and Development Plan

S. 426 directs the Secretary to transmit a leasing and development plan to Congress at least ninety calendar days prior to announcing the invitation to bid on each tract. Each leasing and development plan will be deemed approved unless either House passes a resolution disapproving the plan. The leasing and development plan will identify the extent of the resources in the tract, location of the tracts, estimates of the volume of reserves and the current market value, the cost of producing the oil and gas, anticipated location of facilities, capacity of onshore facilities, need for new onshore facilities, unusual conditions contained within the tract, expected rate of development of the tract, proposed impact on the economic, social and institutional structure of coastal States and certification of the consistency of the development in accordance with the Coastal Zone Management Act of 1972. In addition the plans will be submitted to the Governors of the affected coastal States and adjacent coastal States 60 days prior to transmittal to Congress. The Governors may request postponement of the leasing and development for a period not to exceed three years following the proposed sale date, if the Governor determines that adverse environmental or economic impacts or other damage to the State or residents will result. The Secretary then has the option of:

(1) granting the request;

(2) shortening the postponement to a period of time that is necessary to study and ameliorate the adverse conditions;

(3) denying the request if such postponement would not be in the national interest.

The comments of the Governors as well as environmental impact statements will accompany the leasing and development plans when submitted to Congress.

J. Environmental Impact Assessment and Monitoring

S. 426 designates the National Oceanic and Atmospheric Administration (NOAA) as the lead agency for compliance with the National Environmental Policy Act of 1969 (NEPA). Prior to formulation of the leasing and development plan the Administrator of NOAA in consultation with the Secretary of the Interior will conduct a comprehensive study of the area involved to establish baseline information concerning the status of the marine and coastal environment of the OCS and coastal zone which may be affected by development. This bill enumerates requirements for the environmental impact statement and the leasing and development plan.

The Administrator of NOAA is authorized to monitor the marine and coastal environment subsequent to leasing and development of any area, implement baseline studies, and undertake environmental impact assessments. This bill authorizes the Administrator of NOAA to designate adjacent coastal States as those which have a substantial risk of serious damage or a need for new facilities to directly support OCS development.

K. Safety Regulations for Oil and Gas Operations

This section designates the Secretary of the Department in which the Coast Guard is operating, with the advice of the Administrator of the Environmental Protection Agency, the Administrator of the National

Oceanic and Atmospheric Administration, and the Secretary of the Interior to develop, promulgate and periodically revise safety regulations for OCS operations. This section also provides that the best available technology will be used on all new drilling and production operations and, whenever practicable on already existing operations, wherever failure of equipment would have a substantial effect on public health, safety, or the environment.

L. Inspections and Enforcement of Safety Regulations

The Secretary of the Department in which the Coast Guard is operating will enforce the safety and environmental protection regulations promulgated under this Act. The Coast Guard will regularly inspect all operations. The Secretary of Department in which the Coast Guard is operating will make an investigation and public report on all major fires and major oil spillages and submit to the Congress an annual report on the **enforcement** responsibilities.

M. Remedies and Penalties

S. 426 provides for civil action for violations of this Act and the **issuance of a restraining order or injunction to enforce any provisions.** Failure to comply after notice and expiration of any period for corrective action may be punishable by a fine of not more than $50, 000 for every day of continuance of violation. Fines may not be assessed without a hearing on such charge.

Any person, corporation, or other entity who knowingly violates or misrepresents provisions in this Act upon conviction maybe punished by a fine of not more than $100, 000 or by imprisonment for not more than one year, or both.

N. Citizen Suits

S. 426 provides for the commencement of civil suits by any person having an interest which is or may be adversely affected by OCS development. This section details incidence in which no action may be brought or commenced.

O. Liability for Oil Spills

S. 426 provides for a fine of not more than $10,000 or **imprisonment for not more than one year or both for failure of any person in charge of any oil and/or gas operation in the** OCS to notify the nearest Coast Guard installation. This section provides that the Secretary for the Department in which the Coast Guard is operating will arrange for the removal of spilled oil or gas unless he determines that it will be done properly and expeditiously by the lessee or permittee of the operation.

S. 426 establishes the Offshore Oil Pollution Settlements Fund, the provisions for which are essentially the same as those in S. 521.

P. Research and Development

The Secretary of the Department in which the Coast Guard is operating is authorized by this section to carry out a research and development program relating to but not limited to downhole safety devices, methods for reestablishing control of blowing out or burning wells, cleanup of oil spills, and improved flow detection systems for undersea pipelines. The Secretary of the Department in which the Coast Guard is operating shall establish equipment and performance standards for oil spill cleanup operations.

Q. Determination of Boundaries

S. 426 authorizes the President to establish procedures for settling any boundary disputes, including international boundaries, and establish contiguous boundaries between States.

R. Moratorium on Leasing in Frontier Areas

Upon enactment of this section there will cease all leasing of tracts on the OCS in regions where there has been no previous development or in other areas where geological or environmental conditions make oil and gas development hazardous. If leasing has commenced in these areas, the Secretary of the Interior shall terminate negotiations with regard to all tracts which have been nominated for sale, are in the process of being nominated for sale, or have been designated for sale. The moratorium will continue until the Federal outer continental shelf oil and gas exploration program is implemented and the provisions of this Act implemented with regard to the OCS leasing and developing plan.

S. Pipeline Safety and Operation

S. 426 authorizes the Secretary of Transportation in cooperation with the Secretary of the Interior to review all laws and regulations relating to the construction, operation and maintenance of pipelines and to report to Congress within one year of changes needed. Within one year the Interstate Commerce Commission and the Secretary of Transportation will submit to the President and Congress a report on the adequacy of existing transport facilities and regulations to facilitate distribution of oil and gas resources on the OCS.

T. Review of Shut-in or Flaring Wells

This section provides that within six months after enactment of this Act, and each year thereafter, the Secretary of the Interior will submit a report to the Comptroller General and the Congress listing all shut-in oil and gas wells and wells flaring natural gas and indicating the reasons for the shut-in or flaring. The Comptroller General will then submit findings and recommendations to Congress.

U. Studies

S. 426 authorizes a study to be made on the possibility of achieving an equitable system of lease sales while maximizing production and revenues. This study should include research on competitive bidding systems. S. 426 also authorizes a study of the most appropriate means of developing a National Strategic Energy Reserve, including an assessment of the feasibility of establishing areas in the OCS as strategic reserves, as well as the plausibility of developing certain existing onshore naval petroleum reserves for commercial production in exchange for designating comparable offshore oil and gas reserves as strategic reserves.

VIII. SELECTED COMMENTS AND QUESTIONS ON THE "ENERGY SUPPLY ACT OF 1975" AND THE "OUTER CONTINENTAL SHELF LANDS ACT AMENDMENTS OF 1975"

An analysis of S. 521 and S. 426 reveals specific issues which may require further delineation, including:

1. Need for an Outer Continental Shelf Operations Advisory Board consisting of representatives from Mate, local, and Federal agencies together with industrial spokemen to:

A. monitor the enforcement of provisions and regulations of a leasing and development program for the OCS; and/or

B. coordinate the administration of leases by allowing for centralized information of industrial plans, Mate needs, and Federal funds and services;

2. Institution of an expensive OCS exploration or survey program within the constraints and limitations of the existing incremental Federal Budget;

3. Need for a mechanism to insure coordination of the array of Federal agencies involved in OCS development; and

4. Implementation of the Coastal State Fund.

A. Administration of Leases and States Rights and Needs

It is possible that the coastal States and local governments may have an input into decisionmaking processes which will determine areas to be offered for lease or to be excluded from leasing and into the development of a leasing program. However, after the leases are issued to private companies:

1. What input will State and local governments have in the administration of these leases? What degree of coordination will there be between State and local needs, availability of Federal funds, and plans for

development by private industry? Coordination and timely actions by Federal, state and local agencies might be accomplished by centralized information and other coordinating mechanisms.

2. Should a panel of State and local representatives, industrial spokesmen, and Federal officials be brought together to coordinate and oversee the administration of OCS leases?

3. Is an Outer Continental Shelf Operations Advisory Board needed to monitor the enforcement and administration of provisions and regulations related to OCS leasing and development?

B. Federal Oil and Gas Exploration or Survey Program and the Federal Budget

In the North Sea off the coast of England more than 100 exploration wells were drilled at the cost of $2-3 million each before commercial quantities of oil and gas were discovered. Because of the large sums required for OCS exploration:

1. Would the incremental and limited Federal Budget allow for the expenditure of large sums of monies for OCS exploration?

2. Suppose 50 wells are drilled off the Atlantic Coast with Federal funds' and no oil is discovered. Would congressional pressures limit the continuation of an OCS exploration program? Would the American people promote continued OCS exploration with Federal funds? If little oil is found off the Atlantic Coast, what mechanisms are available for the Federal Government to ensure a return on their investments in OCS exploration?

3. Would an unsuccessful Federal exploration program, i. e. failure to find oil off the Atlantic Coast, reduce future bonus bids on lease sales or reduce the interest of private industry in OCS development?

C. Coordination of the Array of Federal Agencies Involved in OCS Development

A large number of Federal agencies and departments are involved in exploration and development of the OCS including: the Bureau of Land Management, the U. S. Geological Survey, the Federal Power Commission, the Coast Guard, the National Oceanic and Atmospheric Administration, and the Environmental Protection Agency.

1. Should an interagency panel to coordinate diverse Federal functions covering OCS exploration and development be established?

2. Will the large number of Federal permits required for OCS exploration and development result in significant or unnecessary delays? What legislative mechanisms are possible to reduce bureaucratic processing which might delay OCS exploration and development?

3. How can agencies and departments like HUD, Transportation, HEW, Labor and EPA have an increased role in promoting an environmentally acceptable OCS exploration and development program? Should legislation detail responsibilities of these agencies and should it promote coordination of all Federal activities pertaining to OCS development?

D. Coastal State Fund

Under S. 521 grants from the Coastal State Fund are not to exceed $200 million per year for fiscal 1976 and 1977. Such grants are not to be issued on a matching basis but shall be adequate to compensate impacted coastal States for the full costs of any *environmental* effects and social and economic impacts of offshore oil and gas exploration, development, and production. If the States are not required to contribute any matching funds, are there incentives for efficiency in the administration

and utilization of these grants once the funds are distributed to state and local governments ? Would a limited matching ratio (90-10 or 80-20) be better? Will the sum of $200 million per year for fiscal 1976 or 1977 be adequate?

Attachment D.

Analysis of S. 740

"The National Energy Production Board Act of 1975"

ANALYSIS OF S. 740, THE "NATIONAL ENERGY PRODUCTION BOARD ACT OF 1975"

S. 740 recognizes a need to overcome dependence of the United States on foreign energy supplies that are essential to national security, commerce, and full-employment economy, and thereby establishes a National Energy Production Board.

Findings

This section expresses the policy and goal of the United States to end dependence on foreign energy supplies in order to insure independence of foreign policy, improve balance of payments stability, and maintain national security without damaging the environment or the quality of life of the American people. S. 740 recognizes shortcomings in private energy programs and stipulates that new Federal programs to develop the vast, untapped energy resources on the public domain, Federal lands, and the outer continental shelf (OCS) could stimulate the economy and overcome unemployment in the United States. In order to realize this goal, S. 740 promotes accelerated conservation efforts and Federal authority over programs designed to monitor and identify constraints on energy production.

Purpose

S. 740 seeks an effective commitment from both the Federal Government and private enterprise in maximizing domestic energy exploration, development, and production, and aspires to create needed employment and stimulate the economy through its programs.

Definitions

This section gives definitions for terms including; among others: public domain and other Federal lands, Indian lands, outer continental shelf lands,

and Naval Petroleum Reserves.This section designates public domain and other Federal lands se all lands including mineral interests owned by the United States except Indian lands, outer continental shelf lands, and components of the National Park, Wilderness Preservation, Wild and Scenic Rivers, and Trails Systems as well as rivers and lands being considered therefor.

NATIONAL ENERGY PRODUCTION BOARD

S. 740 establishes a National Energy Production Board consisting of a Chairman and four members appointed by the President and approved by the Senate, who are well qualified to direct plans to increase the exploration for, and production of, energy resources on Federal lands and the outer continental shelf (OCS). This section stipulates requirements for the appointment, compensation, and employment of the Chairman and members of the Board. It also makes provisions for vacancies, selection of a Vice Chairman, appointment of a General Counsel and executive director, and meetings of the Board. S. 740 authorizes designated administrative procedures for the Board to carry out the purposes of this act, and to monitor and report to Congress on its activities.

Oil and Gas Exploration Program

This section directs the Board to immediately implement a Federal oil and gas exploration program to supplement activities of the private sector, provide necessary information regarding oil and gas resources to the Government, potential developers, and the public , and to increase competition among producers. The Board is authorized, among other things, to purchase, conduct or contract for surveys of resource lands, and perform or contract for exploratory drilling. The Board is also directed to consult with affected

State and local governments regarding coastal zone management programs, and with the Administrator of the Environmental Protection Agency regarding the exploration program.

PROGRAMS FOR CONGRESSIONAL REVIEW WITH RIGHT OF DISAPPROVAL

Naval Petroleum Reserves Development and Production Program

S. 740 directs the Board to prepare and carry out a Naval Petroleum Reserves Development and Production Program for Naval Petroleum Reserves Numbers 1, 2, and 3 located in California and Wyoming to provide for immediate development of the reserves. This section authorizes the Board to prepare a report specifying its plans for this program and the designated 'lead agency'; the development, location, and procurement of needed facilities for the program; the anticipated social and economic impacts; and procedures for State and local consultation. This section directs the Board to transmit the program to Congress within 90 days, and, within the following 60 days and barring disapproval by Congress, to begin implementation of the program.

Alaska Naval Petroleum Reserve Exploration Program

S. 740 authorizes the Board to prepare and immediately carry out a Naval Petroleum Reserve Numbered 4 Exploration Program in Alaska to obtain resource information for devising an oil and gas development plan, improving the data regarding the values of the resources, providing the public with the information, and increasing competition among producers. This section requires that the Board prepare a Naval Petroleum Reserve Numbered 4 Exploration Program report designating, among other things, which agency will supervise the program, outlining a plan for conducting surveys and exploratory drilling, and assessing and making arrangements for procurement of

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necessary facilities and equipment for the program. The same stipulations for Congressional approval are made under this section as for the Naval Petroleum Reserves Development and Production Program outlined in the previous section.

Federal Facilities Energy Program

S. 740 authorizes the Board to prepare a Federal Facilities Energy Program to provide for the use of existing idle, underutilized, or surplus facilities and resources of the Federal Government to augment the Nation's manufacturing and industrial capacity. Under this section the Board will prepare a report for the implementation of the Federal Facilities Energy Program stipulating a timetable for its implementation and an inventory of federally owned and controlled industrial and manufacturing plants and installations; an inventory of the capacity of various agencies of the Federal Government; identification of idle, underutilized or surplus Federal facilities which could produce equipment used in the production of energy and fuel; estimates for a schedule, necessary manpower, equipment, and planning needed for conversion of Federal facilities for production of energy-related equipment; and other arrangements for leasing, procurements and consultation, related to this program and its social economic, and institutional impacts. The same stipulations for Congressional approval apply in this section as in the previous ones.

Expediting Government Action

This section authorizes the Board to review procedures of Federal agencies and instrumentalities to identify delays resulting from Federal requirements concerning energy related projects. The Board will also suggest lawful procedures which will expedite Federal action, and in certain cases submit such procedures for congressional review. Such recommendations will be in the form

of an Expedited Energy Project Procedure Report with specified requirements and will become law if, after a period of 60 days, neither House of Congress has disapproved it.

PROGRAMS REQUIRING EXPRESS LEGISLATIVE AUTHORIZATION

General

S. 740 authorizes the Board to recommend to Congress legislative proposals, with accompanying reports, which focus on increasing domestic energy production and strengthening energy transportation systems.

Coal Production

This section authorizes the Board to prepare a Federal Coal Production Program consisting of a legislative recommendation for accelerated exploration, development and production of coal under existing Federal leases and from the public domain and Federal lands, a timetable for such program, and an accompanying report. Under this section the report should specify in detail: the present and projected levels of domestic coal production; possibility of a direct Federal role in activities; specifications concerning resources; . present and needed facilities and locations; and procedures for State and local consultation.

Energy Transportation Systems

S. 740 directs the Board to prepare a Federal Energy Transportation System Improvement Program after consultation with the United States Railway Association and the Department of Transportation, which will consist of a legislative recommendation for Federal participation in programs to assure the development or improvement of coal transportation systems. The recommendations

should contain a timetable for development and an accompanying report which specifies deficiencies in, as well as present and future needs for, railroads and other energy transportation systems; possible Federal roles in activities; projects for improvement of old railroads and establishment of new ones; employment opportunities;and other designations.

Federal Oil and Gas Production Program

This section authorizes the Board to prepare a Federal Oil and Gas Production program in the form of a legislative recommendation and a plan for accelerated development and production of oil and natural gas from the public domain, Federal lands and the OCS and timetables for the execution thereof. The program will contain, among other things, provisions for: Federal management of development; joint Federal-private ventures; benefits for small or independent producers and cost sharing; employment opportunities; location, cost of developing, and estimates of resources; capacity of and need for facilities; and a statement of relationship of development with coastal zone management programs.

Transmittal of Programs for Congressional Authorization

S. 740 provides for Congressional authorization through legislation for all programs under this act. This section also stipulates that the Federal Coal Production Program, Federal Energy Transportation Improvement Program, and the Federal Oil and Gas Production Program and the Board's recommendations be submitted to the President for transmittal to the Congress not later than nine months after the effective date of this section.

CRS - 7

GUIDELINES AND ADMINISTRATION

Guidelines, Standard, and Report to Accompany Proposed Action Programs

S. 740 stipulates that every proposed action program to increase the production of energy submitted to Congress will be accompanied by an explanatory background report. This section directs that the Board, in developing the programs, consider the impact of the programs on: attaining self sufficiency; the environment; the revenues received by the Federal Government; employment, and economic vitality of the region; competition, small businesses, and the fiscal integrity of local and State governments, and the vital industrial sectors of the economy. The report required by this section will evaluate the impact of the program; summarize the comments provided for; describe the proposed actions, estimated costs and revenues, organization and financing, anticipated impacts, and unusual conditions; and analyze pertinent Federal, State, and local statutes and regulations, regarding the proposed Federal organization.

Forma of Federal Involvement and Financial Assistance

This section provides that the Board, in recommending to Congress the proposed action programs, suggest direct utilization of Federal agencies; the designation of the lead agency; the role of private enterprise and forms of financial assistance.

Review and Comment

S. 740 provides that prior to transmittal to Congress, a preliminary draft of the proposed action program will be submitted to the Energy Resources Council, the Governor of affected State, and the governing bodies of affected political subdivisions. The Board will assure public disclosure of the

programs and reports and seek comments from private industry, industrial users, labor organizations, small businesses, environmental groups, consumer interests, as well as other interested parties. The Board is directed to prescribe time limits of not less than 30 days for review and comment.

NATIONAL ENERGY PRODUCTION TRUST FUND

Establishment of Fund

S. 740 establishes the National Energy Production Trust Fund in the U.S. Treasury, and between July 1, 1975 and June 30, 1985, there will be covered into the Fund $1,000,000,000 annually for FY 1976, and $2,000,000,000 annually thereafter from revenues under the OCS Lands Act.

Appropriations and Use of Revenues in the Fund

Expenditure of revenues in the Fund must be appropriated therefor by Congress, and will otherwise remain in the Fund.

Board's Authority

The Board will have availability of all appropriated revenues from the Fund for transfer to other Federal agencies to carry out the purposes of this Act.

ADVISORY COMMITTEES AND INTER-AGENCY COORDINATION

Special Energy Action Program Advisory Committees

S. 740 authorizes the Board to establish special program advisory committees to consult with and provide information to the Board concerning the programs. This section also directs the Board to provide for representation

of State and local governments, the energy industry, the transportation industry, the public utility industry, industrial energy users, labor, small business, environmental organizations, and consumer groups.

Inter-Agency Coordination

S. 740 provides for assistance to the Board by the Energy Resources Council to insure communication among the involved agencies of the Federal Government.

GENERAL PROVISIONS

S. 740 makes additional provisions for separability and for the effective date and termination date for the act.

Attachment E.

Oil and Gas from the **Outer** Continental Shelf:

Analysis of the "Energy Supply Act"

and Summary of the Senate Debate **on S.** 3221

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OIL AND GAS FROM THE OUTER CONTINENTAL SHELF: ANALYSIS OF THE "ENERGY SUPPLY ACT"

Paul F. Rothberg
Analyst, Physical Sciences
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February 1, 1975

OIL AND GAS FROM THE OUTER CONTINENTAL SHELF: ANALYSIS OF THE "ENERGY SUPPLY ACT" AND SUMMARY OF THE SENATE DEBATE ON S. 3221

The 93d Congress was and the 94th Congress will be concerned with: the demand for offshore oil and gas; the leasing policies regulating development of the Outer Continental Shelf (OCS); the need to avoid polluting the sea; and the desire to preserve the environmental integrity of the coastal zones. Major questions concerning development of the OCS which *were* not answered by the 93d Congress, but which will confront the 94th Congress include:

1. What national policies for development and exploitation of the OCS are needed?
2. What terms and conditions should govern the leasing of the OCS?
3. Should the Federal Government involve itself in a vigorous OCS oil and gas exploration program?
4. Who should be liable for oil spills resulting from exploitation of the OCS?
5. What form of compensation should be given to coastal states impacted by OCS development?
6. What course of appeal has a ***Governor*** of a coastal state when aggrieved by proposed leasing action of the Secretary of the Interior?

This paper reviews the passage of S. 3221 by the Senate, a major action taken by the 93d Congress on the development of oil and gas from the OCS. A sectional analysis of S. 3221, the "Energy Supply Act of 1974" is presented. Selected reasons for and against S. 3221 which were brought out during Senate debate are summarized. Also, comments and questions useful for further considerations of the "Energy Supply Act" are detailed.

I. SECTIONAL ANALYSIS OF THE "ENERGY SUPPLY ACT OF 1974" AS PASSED BY THE SENATE ON SEPTEMBER 18, 1974

Purpose of S. 3221

S. 3221 is a multi-purposed bili. Its major provisions se

1. To increase oil and natural gas production in the Outer Continental Shelf (OCS) in order to assure material prosperity and **national Security,** reduce dependence on unreliable foreign sources of *energy,* and assist in maintaining a favorable balance of payments.

2. To encourage development of new and improved technology for *energy* resource production that will increase human safety and eliminate **or reduce risk of damage to the environment;**

3. To provide States which are directly impacted by OCS development with comprehensive assistance in order to assure protection of the onshore social, economic, and environmental conditions of the coastal zone; and

4. To make oil and natural gas resources in the Outer Continental Shelf available as rapidly as possible consistent with the need for orderly resource development, and protection of the environment, in a manner consistent with the Mining and Mineral Policy Act of 1970 and designed to insure the public a fair market return on disposition of public resources.

National Policy for the Outer Continental Shelf

S. 3221 establishes a national policy to guide the development and exploitation of the OCS, which should be made available for orderly development, subject to environmental safeguards, consistent with and when necessary to meet national needs. S. 3221 recognizes that development of the OCS will have significant impact on the coastal zone areas of *certain* States, and that these States may require assistance in protecting their coastal zones, insofar as is possible from adverse effects of such impact.

Development of OCS Leasing Program

S. 3221 declares that certain OCS lands should be made available for leasing as soon as practicable. The Secretary of the Interior is directed to prepare and maintain a leasing program which shall indicate the size, timing, and location of leasing activity that will best meet national energy needs for a ten year period.

Selected Features of the OCS Leasing Program Under S. 3221

1. Management of the OCS in a manner which considers all its resource values and the potential impact of oil and gas development *on* other resource values of the OCS and the marine environment;

2. Timing and location of leasing to distribute exploration, and development, and production of oil and gas among various areas of the OCS, considering:

- -existing **information concerning their geographical, geological, and ecological characteristics;**

--their location with respect to, and relative needs of, regional energy markets;

--their location with respect to other uses of the sea and seabed including but not limited to fishing areas. access to ports by vessels, and existing *or* proposed sea lanes;

- -interest by potential oil and gas producers in exploration and development as indicated by tract nominations and other representations;

- -an equitable sharing of developmental benefits and environmental risks among various regions of the United States;

- -timing and location of leasing so that to the maximum extent practicable areas with less environmental hazard are leased first; and

- -receipt of fair market return for public resources.

3. The Secretary of the Interior shall establish procedures for receipt and consideration of nominations for areas to be offered for lease, and

shall, within two years submit a proposed leasing program, which shall include the reservation of an appropriate area as a National Strategic Energy Reserve, to the Congress. "

Establishment of Federal OCS Oil and Gas Survey Program

S. 3221 directs the Secretary of the Interior to conduct a survey program on oil and gas resources of the OCS, and to obtain information about the probable location, extent, and characteristics of such resources. This information is to provide a basis on which to develop a leasing program, and to promote more informed decisions regarding the value of public resources to be leased.

Safety Regulations for Oil and Gas Operations

S. 3221 seeks to insure that through improved techniques, maximum precautions, and maximum use of the best available technology by well-trained personnel, the safest possible operations in the OCS will occur. The Secretary of the Interior, with the concurrence and advice of others is directed to develop, revise, and promulgate safety regulations for operations in the OCS. S. 3221 contains a provision which states that the National Academy of Engineering shall conduct a study of the adequacy of existing safety regulations and technology, equipment, and techniques for operations in the OCS, and to make recommendations for improved safety regulations.

Research and Development to Improve Technology for OCS Development

The Secretary of the Interior is, under S. 3221, directed to carry out a research and development program designed to improve technology related to development of oil and gas resources of the OCS. Areas of

investigations shall include: downhole safety devices, methods for re-establishing control of blowing out or burning wells, methods for containing and cleaning up oil spills. " new or improved methods of development in water depths over 600 meters, and subsea production systems.

Enforcement of Safety Regulations

The Secretary of the Interior and the Secretary of the department in which the Coast Guard is operating shall jointly enforce the safety and environmental protection regulations promulgated under the Act. These regulations shall provide for:

1. physical observation at least once each year of the installation or testing of all safety equipment designed to prevent or ameliorate blowouts, fires, spillages, or other major accidents; and

2. periodic onsite inspection without advance notice to the lessee to assure compliance with public health, safety, or environmental protection regulations.

S. 3221 directs the Secretary of the department in which the Coast Guard is operating to make an investigation and public report on all major fires and major oil spillage occurring as a result of operations pursuant to this Act.

Liability for Oil Spills

S. 3221 establishes an Offshore Oil Pollution Settlements Fund as a nonprofit corporate entity which shall be administered by the holders of leases issued under regulations prescribed by the Secretary of the Interior. The holder of a lease or right-of-way issued or maintained under this Act and the Offshore Oil Pollution Settlements Fund shall be liable

without regard to fault and without regard to ownership of any adversely affected lands, structures, fish, wildlife, or biotic or natural resources relied upon by any damaged party for subsistence or economic purposes for all damages sustained by any person as a result of discharges of oil or gas from any operation **authorized under** this Act under certain conditions; The provision **places a limit** of $100 million, for all claims arising out of any one incident. The holder shall be liable for the first $7 million of such claims that are allowed. The fund which S. "'3221 establishes is liable for the balance of the **claims that** are allowed up to $100 million. **If** the **total claims allowed exceed $100 million, they shall be reduced proportionately, and the unpaid portion maybe asserted and adjudicated under applicable Federal or** State law.

A fee of 2 1/2 cents per barrel of oil, produced pursuant to any lease issued or maintained under this Act, is to be paid into the fund. costs of administration of the fund are paid from the fund. Subject to certain limitations, if the fund is unable to satisfy a valid claim, it may borrow the money needed from any commercial credit source at the lowest available rate of interest upon the approval of the Secretary of the Interior.

Coastal State Fund

S. 3221 establishes the Coastal State Fund to assist coastal States impacted by anticipated *or* actual oil and gas production related to the OCS. Monies from the Fund are to ameliorate adverse environmental effects and control secondary social and economic impacts from development of certain Federal energy resources in or on the OCS adjacent to the submerged lands of such states. The grants may be used for planning, construction of public facilities and provision of public services, and

such other activities as may be prescribed by regulations promulgated by the Secretary of Commerce. Under S. 3221 the Secretary of Commerce shall establish requirements for grant eligibility and shall coordinate all grants with management programs established pursuant to the Coastal Zone Management Act of 1972. Initially, $100, 000,000 are to be authorized to be appropriated for the fund. Subsequently, 10 per centum of the Federal revenues from the Outer Continental Shelf Lands Acts, as amended by this Act, or the equivalent of forty cents per barrel from Federal revenues from the OCS Act, whichever is greater, shall be paid into the fund. Grants shall be made to impacted coastal States in proportion to the effects and impacts of offshore oil and gas exploration, development and production on such States.

Citizen Suits

S. 3221 contains a provision to allow for citizen suits under certain circumstances by any person having an interest which is *or* may be adversely affected by the Act.

Promotion of Competition

The Secretary of the Interior is directed to publish a report with recommendations for promoting competition and maximizing production and revenues from the leasing of OCS lands. Such report shall include considerations of bidding systems, measures to ease entry of new competitors; and measures to increase energy supply to independent refiners and distributors.

Environmental Baseline and Monitoring Studies

Prior to permitting oil and gas drilling on any area of the Outer Con-

tinental Shelf not previously leased under this Act, the Secretary of the Interior, in consultation with the Administrator of the National Oceanic and Atmospheric Administration, shall make a study of the area involved to establish a baseline of those critical parameters of the OCS environment which may be affected by oil and gas development. The study shall include background levels of trace metals and hydrocarbons in water, sediments, and organisms; characterization of benthic and planktonic communities; description of sediments and relationships between organisms and abiotic parameters; and standard oceanographic measurements such as salinity, temperature, micronutrients, and dissolved oxygen.

Revision of Lease Terms

Under existing law the Secretary of the Interior is authorized to offer (OCS) oil and gas leases on the basis of either (1) a cash bonus bid with a royalty fixed at no less than 12 1/270 of the gross revenue from the lease, or (2) on the basis of a royalty rate bid with a fixed cash bonus. Almost all OCS leases have been offered for cash bonus bids with a royalty rate fixed at 16 2/3% of the gross value of production, since the OCS Lands Act was approved in 1953. Under the "Energy Supply Act of 1974" the bidding **shall be: (1) on the basis of cash bonus bid with** a royalty fixed by the Secretary **at *not*** less than **12 1/2** per centum in amount or value of the production saved, removed, or sold, (2) on the basis of a cash bonus bid with a fixed share of the net profits derived from operation of the tract of no less than 30 per centum reserved to the United States, or (3) on the basis of a fixed cash bonus with the net profit share reserved to the United States **as** the bid varies.

A rationale for this proposal was eludicated in the Report on S. 3221

by the Senate Committee on Interior and Insular Affairs:

> The Committee's decision to eliminate the royalty bidding alternative is based on the widespread agreement of most economists and oil industry representatives concerning the undesirable effects of royalty bidding. Specifically, the Committee believes that royalty bidding would encourage speculation, increase the likelihood of premature shutdown of production under conditions of high royalty rates, and result in reduction in petroleum output and lease revenues.
>
> However, the Committee wants to provide a lease allocation system that would encourage the widest possible participation in competitive lease sales consistent with receipt by the public of fair market value for its resources. Testimony before this Committee and elsewhere has revealed general acceptance of the proposition that high bonus bids have created a barrier to the entry of small and medium size oil firms to the OCS arena. The Committee believes that net profits share arrangements can be effective in shifting government revenue away from initial bonuses and into deferred payments made out of a leaseholders profits. 1 /

Other, changes in the leasing and exploration aspects of the OCS program proposed in S. 3221 were summarized in the Report of S. 3221 of the Senate Interior and Insular Affairs Committee:

> Under existing law, all OCS oil and gas leases are for a primary term of five years. As amended by section 203, Subsection 8(b) of the OCS Lands Act would permit the Secretary to issue leases with a primary term of up to ten years.
>
> The purpose of the increase in permissible maximum primary lease term is to encourage exploration and development in areas of unusually deep water or adverse weather conditions, where the five year period may be insufficient for both exploration and the mobilization of new technology called for in the event of a discovery.
>
> Section 204 further amends Section 8 of the OCS Lands Act by requiring that royalty and net profits share oil produced from all leases granted after the effective date of the amendment be offered by the Government at a competitive auction. . . 2 /

According to the Committee Report:

> The purpose of the amendment is to create a free market in crude petroleum. However, the Committee was anxious to insure, that independent refiners not be denied access to OCS crude. To this end, Section 203 directs the Secretary to limit participation in sales where

---

1/ U. S. Congress. Senate. Committee on Interior and Insular Affairs. Report No. 93-1140. Energy Supply Act of 1974. September 9, 1974. p. 21.

2/ Ibid., p. 21-22.

such limitation is necessary to assure adequate supplies of oil at equitable prices to independent refiners. The Secretary can define the term "independent refiner" by regulation. The Committee intends that the **term apply only to those refiners not part of an organization which produces crude petroleum. The Secretary could impose a size limitation in terms of** refining capacity if he **deemed that desirable. 3/**

S. 3221 contains other revisions of OCS leasing terms, which are designed to **insure maximum production from outstanding leases. It provides that** all leases issued after S. 3221 is enacted must require that development be carried out in accordance with a development "plan which has been approved by the Secretary. Failure to comply with the development plan will terminate the lease.

The development plan will set forth, in the degree of detail established in regulations issued by the Secretary, specific work to be performed, environmental protection and health and safety standards to be met, and a time schedule for performance. The development plan may apply to all leases included within a production unit.

A proposed development plan must be submitted to the Secretary within six months after the date of enactment of S. 3221 for all outstanding permits and leases. Failure to submit a development plan or to comply with an approved development plan shall terminate the lease.

According to the Senate Report on S. 3221 the Senate Interior Committee recognized that:

> ..... **there must be some flexibility in the degree of detail required in development plans. It expects that the Secretary will require exploration activity to start within a specified time. If production is established the development plan would need to be revised. This subsection authorizes revisions of development plans if the Secretary determines that revision will lead to greater recovery of the oil and gas, improve the efficiency of the recovery operation, or is the only**

3/ Ibid. , p. 22.

means available to avoid substantial economic hardship on the lessee or permittee. 4/

Holder of oil and gas leases issued pursuant to this Act shall not be permitted to flare natural gas from any well after the date of enactment of S. 3221, unless the Secretary finds that there is no practicable way to obtain productioner to conduct testing or workover operations without flaring. The Senate Interior and Insular Affairs Committee maintained that unnecessary waste of this valuable natural resource must not be permitted.

S. 3221 amends Section 11 of the OCS Lands Act which authorizes the Secretary to permit geological and geophysical exploration in the Outer Continental Shelf. It would require that all permits for such explorations contain terms and conditions designed to (1) prevent interference with actual operations under any OCS lease, (2) prevent or minimize environmental damage, and (3) would required the permittee to furnish the Secretary with copies of all data (including geological, geophysical, and geochemical data, well logs, and drill core analyses) obtained during such exploration. The Secretary must maintain the confidentiality of all data so obtained until after the areas involved have been leased or until such time as he determines that making the data available to the public would not damage the competitive position of the permittee, whichever comes later.

Postponement of Lease Sales

S. 3221 provides that prior to the sale of each (OCS) lease the Governor of the adjacent States may request the Secretary to postpone such sale for

---

~/ Ibid., p. 23.

a period not to exceed three years **following the date proposed in such** notice if he **determines that the sale will result in adverse environmental** or economic impact or other damage to the State or residents thereof. Once, presented with such a request for postponement the Secretary is given three options:

1. grant the request for postponement;

2. allow for a shorter postponement than requested provided that such time is adequate for study and provision to ameliorate adverse economic or environmental effects, and for controlling secondary social or economic impact associated with development of Federal **(OCS) energy resources; or**

3. deny the request for postponement.

National Coastal Resources Appeals Board

S. 3221 creates within the Executive Office of the President the National Coastal Resources Appeals Board which shall hear appeals from the Governor of a State aggrieved by the action of the Secretary on requests for postponement of OCS lease sales. The Board can overrule the action of the Secretary if it finds that the State is not adequately protected from adverse environmental and economic impacts and other specified damages or if the request for postponement by the Governor is consistent with the national policy expressed in S. 3221.

Miscellaneous Provisions

Miscellaneous provisions of S. 3221 include:

1. A report on the adequacy of existing transport facilities and regulations to facilitate distribution of oil and gas resources of the Outer Continental Shelf;

2. A report listing all shut-in oil and gas wells and wells flaring

natural gas on leases covered by the OCS Lands Act;

3. A study on methods and procedures to implement a uniform law providing liability for damage from oil spills from OCS operations, tankers, deepwater ports, and other sources; and

4. A study to determine the feasibility of establishing a fuel stamp program to utilize coupons to assist those on low and fixed incomes in purchasing home heating fuels in the winter months. .

Attachment F.

An Analysis of the Department of the Interior's Proposed Acceleration of Development of Oil and Gas on the Outer Continental Shelf

84th Congress
1st Session } COMMITTEE PRINT

AN ANALYSIS OF THE DEPARTMENT OF THE INTERIOR'S PROPOSED ACCELERATION OF DEVELOPMENT OF OIL AND GAS ON THE OUTER CONTINENTAL SHELF

PREPAREED AT THE REQUEST OF

HON. WARREN G. MAGNUSON, *Chairman, Committee on Commerce*

AND

HON. ERNEST F. HOLLINGS, *Chairman, National Ocean Policy Study*

FOR THE USE OF THE

COMMITTEE ON COMMERCE

AND

MEMBERS OF THE NATIONAL OCEAN POLICY STUDY

PURSUAANT TO

S. **Res. 222**

NATIONAL OCEAN POLICY STUDY

MARCH 5. 1975

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LETTER OF TRANSMITTAL

U.S. SENATE,
COMMITTEE ON COMMERCE,
Washington, D. C., March 5, 1975.

DEAR COLLEAGUE: I am pleased to forward this staff analysis of four major policy issues related to the Department of the Interior's proposal to significantly expand leasing of lands on the Outer Continental Shelf (OCS) in 1975 for the exploration and development of oil and gas rserves.

analysis was conducted by the staff of the National Ocean Policy Study. We wish to express our appreciation for significant portions. of this effort to the staff of the Ocean Project Group of the Congressional Office of Technology Assessment (OTA), including Robert W. Niblock, Thomas A. Cotton, and Lionel S. Johns. This work is an adjunct to the OTA assessment of the onshore impacts of three different energy--related technologies (OCS development, deep-water ports, and floating nuclear power plants) upon the coastal zone of New Jersey and Delaware, which was requested by the National Ocean Policy Study. It is also connected with the assessment by the Ocean Project Group of the feasibility of separation of exploration from development in current OCS lease procedure which was requested jointly by the Committee on Commerce and the Committee on Interior and Insular Affairs.

This preliminary analysis by the staff suggests that if in fact the entire 10 million acres were leased, it would overextend present and projected industry exploration capacity; that it is in the Nation's interest to quickly determine the extent and nature of OCS resources, but more caution should be exercised in their development; that the coastal States are almost unanimous in their opposition to the Department's present proposal but are willing to cooperate in a more orderly development of these resources; and that since accelerated leasing during the past two years has reduced competition and the return to the public, it is likely that the proposed acceleration will have even more adverse impacts.

I wish to emphasize that the conclusions incorporated into this staff report, which may rove to be controversial, have neither been approved, disapproved , nor considered by the Senate Committee on Commerce or the National Ocean Policy Study.

ERNEST F. HOLLINGS,
Chairman, National Ocean Policy Study.

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INTRODUCTION

In an address to the Nation on January 23, 1974, President Nixon directed the Secretary of the Interior to increase the acreage leased on the Outer Continental Shelf to 10 million acres beginning in 1975. This more than tripled the acreage the Department of the Interior originally @anneal to lease. The basic objective of the proposed acceleration in OCS development was to increase domestic production as rapidly as possible and reduce dependence on expensive and unstable foreign supplies of oil. The proposed plan would involve leasing in eve "frontier" area within the next four years.

A number of questions about the fusibility and desirability of the proposal have since been raised by the Congress and representatives of nearly every coastal state. This analysis addresses four recurring questions: 1. What are the longer term resource and energy implications of rapid development of OCS oil and gas? 2. What effect will this acceleration have on revenue returns from the sale of these public lands? 3. Does the industry have the capacity to explore the 10 million acres? 4. Can this development proceed without serious disruption of those adjacent coastal states which have no previous experience or supporting onshore infrastructure?

The analysis of these questions is brood on preliminary information and data developed for several ocean assessments that the Office of Technology Assessment has underway for the National Ocean Policy Study.

L SUMMARY

A. Long term implications of resource depletion

The accelerated leasing program is intended to replace expensive and **unstable** foreign **imports by domestic production as quickly as possible, but recent estimates of remaining recoverable oil resources in the U.S. made by the National Academy of Sciences and others suggest that accelerated development of domestic production could lead to serious depletion or exhaustion by the end of the century. If they are correct, substitution of domestic oil for imports in the short run may lead to a greater dependency on imports in the long run unless consumption can be reduced and acceptable alternative sources can be developed rapidly.**

Policy for the development of OCS oil and gas will be integral part of an overall U.S. energy strategy. A basic determinant of this strategy will be the amount of domestic recoverable oil and gas that is yet to 'be" discovered. Estimates of these amounts are the subject of considerable disagreement. At one extreme, the most estimate of the &. Geological Survey (400 billion barrels of undiscovered recoverable oil) implies that domestic production could exceed 20 million barrels a day by 1985 and remain there through 2020, declining below current levels of production only after the middle of the next century.[1] At the other extreme, estimates by the National Academy of Sciences (113 billion barrels), Mobil Oil Corporation (88 billion barrels), and others imply that domestic resources could be seriously depleted or exhausted by the end of this century even if consumption were held at current levels.[2]

The fact which has not been clearly recognized in discussions of an accelerated OCS leasing program is that the appropriate rate for the development of domestic resources is dependent upon which estimates are correct. If the optimistic figures are valid, then we plenty of time to develop alternatives in an deliberate manner, and could perhaps reasonably aim at effectively eliminating oil imports by 1985 or 1990. But if the pessimistic estimates are correct, it may be necessary not only to take very strong measures to curb demand and to accelerate the development of acceptable alternative sources of petroleum products, but also to limit production from domestic sources below the maximum efficient rate and to accept a relatively high level of imports, in order to avoid a period of extremely heavy dependence on imports toward the end of this century. In either case, reliance upon synthetics from oil shale and coal to replace declining domestic production will require the solution of major technical and enviromental problems associated with their production.

[1] Federal Energy Administration, *Project Independence Report*, November 1973, p. 430.
[2] All resource estimates are cited in table II-1. Estimates of timo until exhaustion are found in table II-2.

Despite the differences in resource estimates, all projections agree that a major fraction (from 32% to 61%) of the remaining undiscovered recoverable oil will be found on the Outer Continental Shelf. Thus a more coherent energy policy cannot evolve until the true extent of these resources is more precisely known. Every major decision on U.S. energy strategy may hinge on the extent of these resources and the rate at which they are developed. Under the present system for allocating and developing OCS oil and gas, decisions that are in effect irreversible are set in motion on a very limited factual basis. The critical question that now must be addressed is what is the best method for "modernizing" the existing system to ensure that these resources are developed in a manner that does not result in a catastrophic disruption—economic, environmental or social—in the short term or long term?

B. Effects on return to the public

Evidence from 1973 and 1974 lease sales shows that competition has declined as acreage offered has increased and suggests that the proposed accelerated leasing program may lead to a significant reduction in the return the public receives for its resources. Recent Department of the Interior efforts to increase competition in bidding and to reject unacceptably low bids appear inadequate to counteract the effects of greatly accelerated offerings.

The greatly accelerated OCS leasing program proposed by the Department of the Interior may significantly reduce the competition for OCS tracts, thereby failing to ensure that the public receives fair market value for its resources. This effect is already apparent in the five sales of new acreage in 1973 and 1974. During this period, while the area offered for bids nearly doubled, the average number of **bids** per tract receiving bids (a good measure of overall competition) declined sharply from 5.3 bids per tract in the first sale of 1973 to 2.2 bids per tract in the last sale of 1974.[3]

This decline was accompanied by a considerable increase in the proportion of tracts leased on the basis of only one or two bids, the level of competition identified by a Department of the Interior analysis as being low enough to jeopardize the receipt of fair market, value by the public.[4] In the first sale of 1973, 37.0% of the tracts leased, representing only 9.3% of the bonus money accepted, received no more than two bids. But the last sale of **1974, the** fraction leased on the basis of only one or two bids had risen to 66.9%; more importantly, these facts now represented **39.4%** of the bonus money accepted in

The Department of the Interior's system for estimating the resource value of tracts offered for lease may not be adequate to ensure a fair return to the public in the face of declining competition. The Department has recently improved its presale tract evaluation system, but in the last sale (February, 1975) the total of the high bids on tracts

[3] Unless otherwise noted, all data concerning lease sales are derived from U.S. Department of the Interior, Bureau of Land Management, New Orleans Office, "Outer Continental Shelf Statistical Summary, 1973-1975."

[4] U.S. Congress, House Permanent Select Committee on Small Business, Subcommittee on Activities of Regulatory Agencies, 1 Energy Data Requirements of the Federal Government, Part III—Federal Offshore Oil and Gas Leasing Policies," Hearings, 93d Cong., 2d sess., Mar. 26, 27; Apr. 9-11; May 7, 1974, (Washington D. C.: U.S. Government Printing Office, 1974), p. 244.

receiving bids was still nearly twice (1.93) the sum of the Department's evaluations of the tracts.[5] This ratio would lead to a cumulative undervaluation of **$7.2** billion if applied to the **sale** of **10** million acres for $15 billion in 1975. one likely cause of this difference is the fact that for recent sales the Department has based its presale evaluations on the assumption that the OPEC **cartel** would break and that world prices would decline substantially below current levels and would remain low in real terms throughout the productive life of the tracts.[6] In the February, **1975 sale** the Department assumed a mean oil price of **$7.67 in its** presale calculations; if the rice in fact remains at or above $11.00, this would lead to an undervaluation of over 30%.

C. Principal coastal state concerns related to accelerated OCS development

The proposed 10 million acre lease program and the Department of the Interior's implementation plans have been severely criticized by leading representatives of nearly all the coastal states. The coastal states have proposed major reforms in OCS leasing and management procedures, and new legislation which would provide for the Government to contract for a comprehensive program of exploration on the Continental Shelf has been introduced. Prolonged delays in the development of OCS resources may result unless the Department becomes more responsive to coastal state concerns.

The Department of the Interior's lack of awareness of the issues and concerns at the state level has served to unite the coastal states on the OCS issue. The state solidarity on the issue is substantival revealed in a major policy statement adopted by the National Governors' Conference **on** February 20, 1975.[7] The rune point Policy Position on OCS Energy Resources was adopted by a 30 to **1** margin. It calls for prompt exploration of the OCS; exploration of OCS resources prior to the decision to produce these resources; a phased production objective for OCS resources; new leasing schedules and procedures; administratative or legislative reform to provide for a more effective state role in resource management; Federal funding to assist the states in coping with planning needs and adverse impacts of OCS development; and strict liability and no-fault compensation measures.

Senator Ernest F. Hollings of South Carolina introduced legislation (S. 426) in the 94th Congress which would separate exploiration for oil and **gas on** the **OCS from development and production by having** the government contract for a comprehensive exploration program. Senator Henry M. Jackson of Washington has introduced legislation (S. 740) to create a National Energy Production Board, which would be authorized to carry out a Federal oil and gas exploration program. The Coastal **Zone** Environment Act of 1975 (S. 586) introduced by Senator Hollings on February 5, 1975, is intended to provide State and local governments with financial and technical assistance to adequately plan for, accommodate **and** anaticipate **growth problems** caused by OCS development. It provides a Coastal Impact Fund of up to $200 million per year and an additional $10 **million for short term research on specific problems.**

[5] Provided by the U.S. Department of the Interior.
[6] Assumptions provided by tho U.S. Department of the Interior.
[7] National Governors' Conference, "Policy Position on OCS Energy Resources," Feb. 20, 1976.

D. Industry's capacity to explore 10 million acres

Limited availability of mobile drilling platforms may restrict the total OCS area that could be explored in the next five years to no more than seven million acres. Offering Up to 19 million acres in 1975 to lease 10 million may thus fail to increase production faster than would a lower leasing rate.

Studies by the Federal Energy Administration (FEA) [8] and the National Petroleum Council (NPC)[9] of the availability of equipment, manpower, and capital for oil and gas exploration have agreed that the supply of mobile drilling rigs will be one of the major constraints on the ability to explore new OCS acreage. Our own calculations-based on data and analysis from FEA, NPC; and Offshore Rig Data Services,[10] an industry information service—show that the total number of rigs that could reasonably" be expected to be available in the U.S. between now and 1980 could support exploration of a maximum of seven million acres. Since about 2.7 million acres which were leased in 1973 and 1974 must be explored as well, an additional 10 million acres leased in 1975 would Almost certainly exceed the available rig capacity for the next five years (the current term of OCS leases) oven if no further leasing were to take place until 1980.

The National Petroleum Council's recommendations concerning OCS leasing support the conclusion that 10 million acres would exceed the area the industry can explore in five years. in 1972, the NPC, an advisory board to the Secretary of the Interior made up largely of oil industry representatives, recommended that the rate of OCS leasing increase from one million acres per year to 1.6 million acres per year by 1980, and to 2.3 million acres per year by 1985, with a goal of leasing 21 million new acres by 1985.[11] The Department of the Interior's proposal to lease **10** million acres in 1975 is over six times the rate that the NPC suggested should be reached in 1980.

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[8] Federal Energy Administration, op. cit., pp. 238–249.
[9] National Petroleum Council, "Availability of Materials, Manpower and Equipment for the Exploration, Drilling and Production of Oil—1974–1976," September 1974.
[10] Offshore Rig Data Services, "The Offshore Rig Location Report," December 1974, Jan. 10, 1975.
[11] National Petroleum Council, "U.S. Energy Outlook," (Washington, D. C.: U.S. Government Printing Office, December 197'2.)

11. LONG RUN IMPLICATIONS OF RESOURCE DEPLETION

The purpose of the Department of the Interior's proposed 10 million acre leasing program is to accelerate production of OCS oil and gas as rapidly as possible by leasing the most attractive prospects in each frontier area. The basic rationale for this objective is the fact that the OCS can produce oil and gas at a far lower cost than either foreign sources or alternatives such as oil from shale or coal. Thus substitution of OCS oil for expensive imports can both reduce the real cost of energy to the U.S. economy, and at the same time reduce our vulnerability to restrictions in foreign sup lies.

While the case for expanding OCS oil an gas production in the short run has considerable merit, our subsequent analysis will show that. there remain a number of major questions about the appropriateness of the Department of the Interior's reposal for achieving this objective. Furthermore, there are potentialy serious long-run implications of rapid exploitation of depletable domestic oil and gas resources that have not been given adequate consideration in the analyses of accelerated development performed by either the Deparatment of the Interior or the F A. The problem is that the benefits obtained by substituting domestic OCS production for imports in the near future might be offset by the costs that could occur in the long run if domestic resources are substantially depleted before alternate sources, such as oil shale and coal synthetics, can be developed in sufficient quantities.

The magnitude of this potential problem depends crucially on the amount of remaining U.S. domestic petroleum resources, a question which will be considered in this section. To summarize the results of this analysis, while the most optimistic estimates of remaining resources imply ample supplies of petroleum well into the next century, the more **conservative estimates suggest that U.S. resources could be exhausted** by the end of this century even if consumption were held at current levels.

The fact which has not been clearly recognized in discussions of an accelerated OCS leasing program is that the apropriate rate for the development of domestic resources is dependent upon which estimnates are correct. If the optimistic figures are valid, then we have plenty of time to develop alternatives in a deliberate manner, and can perhaps reasonably aim at effectively eliminating oil imports by 1985 or 1990. But if the pessimistic estimates are correct, it may be necessary not only to take very strong measures to curb demand and to accelerate the development of alternative sources of petroleum products, but also to limit production from domestic sources below the maximum efficient rate and to accept a relatively high level of imports, in order to avoid a period of extremely heavy dependence on imports toward the end of this century. This problem will examined in more detail in the remainder of this section.

In 1973, the U.S. consumed petroleum liquids at a rate of 17.3 million barrels per day, or 6.3 billion barrels per year. Of this amount, 11.1 million barrels were produced in the U.S. and 6.2 million (35.9%)

were imported. According to 1974 estimates of the American Petroleum Institute (API) and the American Gas Association (AGA), the U.S. has 46.9 billion barrels of roved and indicated reserves of oil and natural gas liquids (NGL).[1] This amount represents only 11.6 years of reduction at the 1973 rate of production of 11.1 million barrels per day, or 7.4 years of production at the 1973 rate of consumption.

Of course, existing reserves cannot produce ae a constant rate; instead, the rate of production declines continuously over the lifetime of a reserve. For, this reason, while the average production per well of the 500,000 producing wells **in the U.S. in** 1972 **was 22 barrels per** day, over 359,000 of those were producing 10 barrels per day or less.[2] For example, total U.S. production of oil and natural gas liquids declined about 4% in 1974 in spite of the increase of the price of new oil to over $10 per barrel.[3] If this rate of decline continues, the output of existing U.S. wells may drop to 60% of the present level by 1985, thereby reducing a shortfall of **4.4 million barrels per day in 1985 even if U.S. consumption does not grow at all during the next 10 yeara. (Several indications from BLM and industry sources suggest that in fact a 40% decline in 10 years** may be **an optimistic assump**tion, **and that production from existing wells may instead drop at a** rate as high as 7% per year in the next several years.)

If we are simply to replace both the projected decline of 4.4 million barrels per day of domestic production and the 1973 import, level of 6.2 million barrels per day by 1985, without taking into account any growth in domestic consumption, we would have to provide an additional 10.6 million barrels per day of new production by 1985.

The magnitude of the oil supply problem becomes more evident if we take into account the effects of an annual rate of growth of demand for petroleum liquids of a conservative 2% per year. This is well below the 5.6% growth rate in the US between 1970 and 1973[4] and below the USGS 1972 projection of a 3.6% annual growth rate from 1972 to 1985, which was the figure used by the Department, of the Interior in its impact statement to justify the 10 million acre lease sales Over 10 years, a 2% annual growth rate represents an additional demand of 3.8 million barrels per day in 1985. When added to the 10.6 million barrels per day that would be needed to replace current imports and projected declines in current output, this implies a need for 14.4 million barrels per day of new production in 1985, or additional imports of 8.2 million barrels per day.

The purpose of the accelerated OCS leasing program is to provide the new production that is needed to replace declines from old wells and to reduce or eliminate the need for imports, However, the complete replacement of imports by new domestic production could create a need for greater imports by the end of this century. This can be seen by examining current estimates of remaining U.S. oil resources. The following table compares some of the most important recent estimates.

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[1] American Gas Association, American Petroleum Institute, Canadian Petroleum Association, "Reserves of Crude Oil, Natural Gas Liquids, and Natural Gas in the United States and Canada nnd United States Productive Capacity as of Dec. 31, 1973," vol. 28, June, 1974.

[2] National Petroleum Council, "Availability of Materials, Manpower and Equipment for the Exploration, Drilling nnd Production of Oil—1974-1976," September, 1974.

[3] Estimated from IT. S. Department of the nterior, Bureau of Mines, "Crude Petroleum, Petroleum Products, and Natural Gas Liquids," October 1974.

[4] FEA, "Oil: Possible Levels of F uture Production," a Project Independence Task Force Report, p. II-7 exhibit II-4.

[5] "Proposed Increase i. Acreage t. be Offered for Oil and Gas Leasing on the Outer Continental Shelf: Draft Environmental Impact Statement," DES 74-90, U.S. Department of Interior Bureau of Land Management, October 1974.

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TABLE II-1.—ESTIMATES OF UNDISCOVERED RECOVERABLE OIL RESOURCES OF THE UNITED STATES

source	Oil and natural *gas* liquids (billions of barrels) Onshore	Offshore	Total
1. National Petroleum Council (1972) [1]	90	64	154
2. Mobil Oil Corp.(1974) [2]			
3. National Academy of Sciences(1975)[3]	(4)	(4)	113
4. Hubbert(1974) [5]	27	45	72
5. U.S. Geological Survey(1974)[7]	136-272	64-128	200-400

[1] The National Petroleum Council estimates ware for undiscovered oil-in-place, rather than for recoverable oil. The figures in the table were obtained by applying an average recovery factor of 40 percent to the oil-in-place estimates. National Petroleum Council, "U.S. Energy Outlook."
[2] Robart Gillette, "Oil and Gas Resources: Did USGS Gush Too High?", Science, July 12,1974, p. 128, table 1.
[3] National Academy of Sciences, "'Mineral Resources and the Environment," February 1975, p. 8.
[4] No breakdown given.
[5] National Academy of Sciences, op. cit., p. 89, table 2.
[6] The breakdown between onshore and offshore resources is based on rough estimates provided by Dr. Hubbert in a personal communication.
[7] National Academy of Sciences, op. cit., p. 89, table 2.

The 113 billion barrel figure estimated by the National Academy of Sciences (NAS) was based on a careful analysis of a wide range of industry and USGS estimates, including the others cited in the table above (with the exception of the NPC estimates). This analysis revealed two major points of interest:

1. The USGS estimates are far higher than any of the others considered by the NAS. Even their lowest figure of 200 billion barrels is well above even the highest of the other estimates. If the USGS figures, which were used in the justification for the accelerated leasing program, prove to be substantially overoptimistic, their use as a basis for U.S. energy policy could lead to too-rapid development and exploitation of domestic oil resources, and inadequate emphasis on demand reduction.

2. All of the **estimates examined indicated** that the bulk of the remaining discoverable resources will be found offshore and in Alaska. As the above table shows, a large fraction (30% or more) of the total will be found on the OCS. Thus a major portion of the remaining U.S. oil resources are under federal jurisdiction, to be managed in the public interest.

The implications of the differences in resource estimates are substantial. The Federal Energy Administration's projections of long-term oil production that are based on an estimate of about **200 billion barrels of undiscovered recoverable resources,** the same as the lower limit of the USGS estimate, indicate that production will peak in the mid-to-late 1980's and will decline below current levels around 2030.[8] In contrast, Hubbert's estimate of 72 billion barrels implies that the peak has already occurred. In fact, there has been a consistent decline in domestic production since November, **1970.**[7] **If Hubbert is correct, it may be that even the most rapid offshore development will** not be **able to offset the decline in onshore production.**

Supporting this view, a Mobil Oil Corporation vice president, quote in a recent issue of Science magazine,[8] **said that Mobil** scientists

[6] FEA, *Project Independence Report*, p. 43S, figure IX-2.
[7] *Science*, op. cit., p. 129.
[8] Ibid., p. 127.

had calculated national oil and gas resources by" three different methods—all of which concluded that the Geological Survey's estimates arc far too high. Based on these analyses he argued that domestic reserves have been so thoroughly exhausted that the industry would be lucky to maintain production at the present level. If this expectation is accurate, then there is a far greater need for immediate action to reduce consumption of oil and to develop alternative sources of supply than would be the case if the most optimistic USGS estimate of 400 billion barrels were correct.

Another way of looking at the long-term implications of the differences in resource estimates is to caculate the number of years of supply that the estimates represent in terms of specified rates of consumption. Table II–2 shows the results of such calculations, and the dates of exhaustion they imply, based on both the 1973 rate of consumption of 6.3 billion barrels per year and the lower rate of 4.1 billion barrels a year that would result if imports are allowed to continue at 35% of the 1973 total. In both cases we have incorporated a rejected production of 63 billion barrels from roved reserves in known fields. This figure was obtained from the API and AGA estimate of 41.8 billion barrels of proved reserves of oil and natural gas liquids, augmented by the additional 50% (20.9 billion barrels) that the NAS study predicted would be forthcoming from proved reserves.[9]

The calculations presented in Table II-2 are of course only rough indicators of the implications of the various resource estimates, since it is not in fact possible to produce reserves at a constant or increasing rate until exhaustion. Nonetheless, the table does give an appreciation of the relative differences involved. Three major points are highlighted by these figures. First, the range between the most pessimistic and most optimistic estimates is considerable—33 years to exhaustion compared to **113 years, if there is no growth in consumption and imports continue to supply 35% of domestic needs. The energy policies implied by these two extremes differ enormously in terms of the need for immediate remedial actions. Second, even a relatively low 2.5% annual growth rate of consumption will substantially reduce the time to exhaustion; for example, the time implied by the NAS estimate if imports continue at present levels would be reduced from 43 years with no growth to 29 years at the 2.5% growth rate. Third, the goal of the elimination of dependence upon imported oil may be quite costly if the lower estimates fire correct, since its attainment could reduce by at decade** or more the already limited time available to develop acceptable ways of producing alternatives such **shale oil** and coal **synthetics.**

Even if the actual undiscovered recoverable resources approach the lower end of the relatively optimistic **USGS rangc** of estimates, accelerated development to **reduce or eliminate imports in the short run could lead to a serious problem early in the next,** century. The FEA *Project Independence Report* observes:

> If we accelerate oil and gas production in the next decade wc could reduce imports quickly. However, unless accelerated exploration reveals a largcr resource base than the one used in the long-term model, this benefit will **come at the** expense of a **greater oil and gas shortfall in the early 21st century.'"**

[9] NAS, op cit., p. 80.
[10] FEA, *Project Independence Report*, p. 435.

TABLE II-2.–YEARS OF REMAINING DOMESTIC PRODUCTION OF OIL AND NATURAL GAS LIQUIDS

Estimate	Undiscovered oil and NGL (billions of barrels)	Total remaining production of oil and NGL (billions of barrels)[1]	No growth in consumption (6.3 billion barrels/year)				2.5 percent annual growth			
			No imports		35 percent imports		No imports		35 percent imports	
			Years of production	Year of exhaustion	Years of production	Year of exhaustion	Years of production	Year of exhaustion	Years of production	Year of exhaustion
1. National Petroleum Council	154	217	34	2009	53	2028	25	2000	34	2009
2. Mobil Oil		151		1999		2012		1984	26	2001
3. National Academy of Sciences	113	176	28	2003	43	2018	21	1996	29	2004
4. Hubbert		135				2008		1992		
5. USGS	200-400	263-463	42-73	2017-2048	64-if;	2039-2088	28-42	2003-2117	38-54	2013-2029

[1] This is the sum of undiscovered recoverable oil and NGL plus an additional 63 billion barrels of oil and NGL estimated to be producible from known fields.

FIGURE II

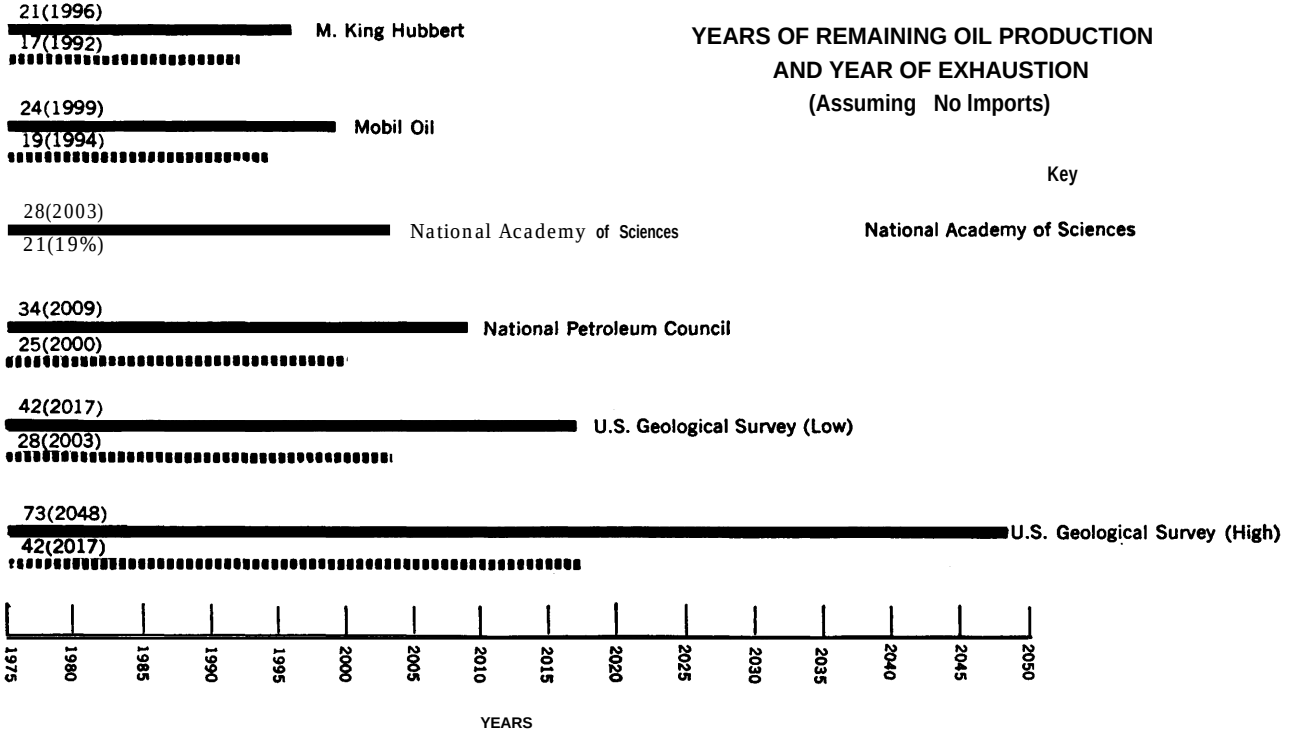
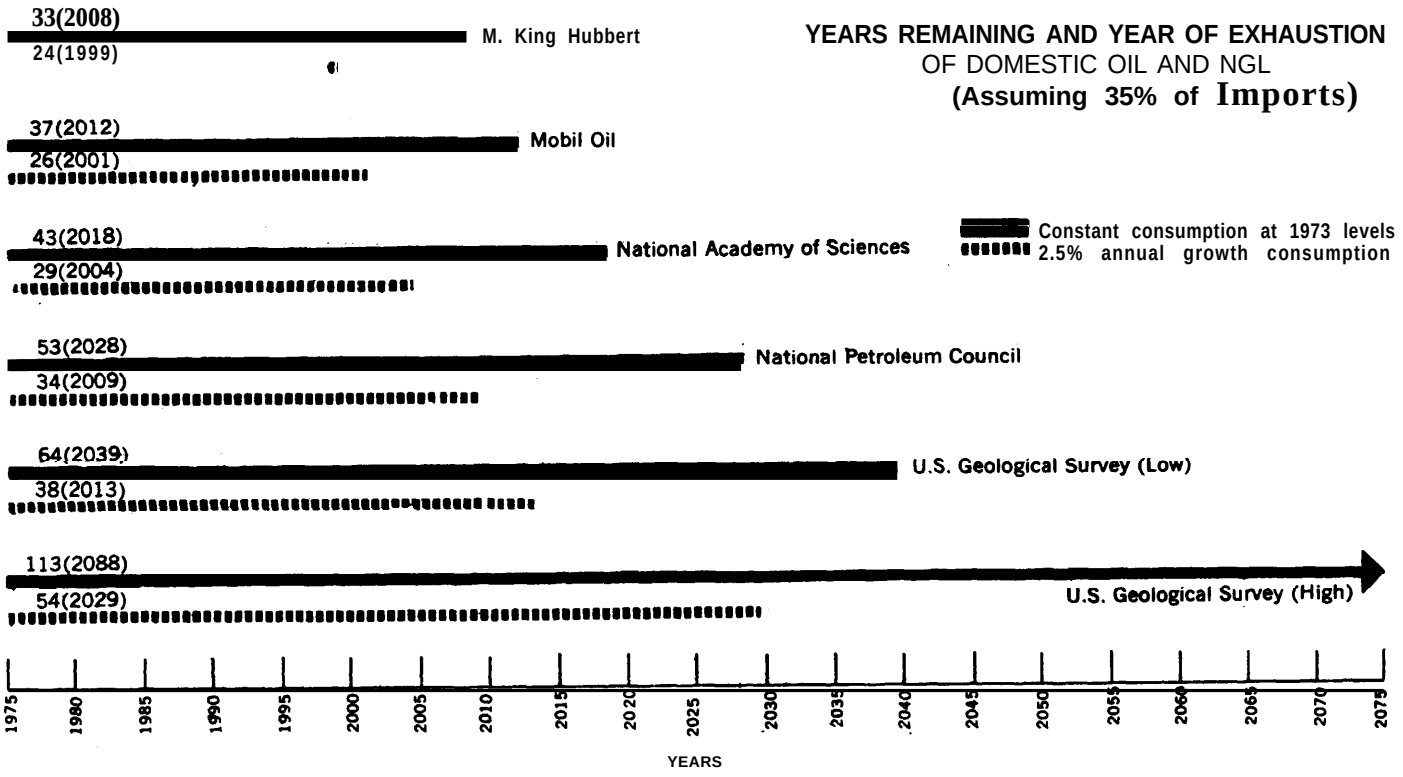

YEARS OF REMAINING OIL PRODUCTION
AND YEAR OF EXHAUSTION
(Assuming No Imports)
Key
National Academy of Sciences
21(1996)
17(1992)
M. King Hubbert
24(1999)
19(1994)
Mobil Oil
28(2003)
21(19%)
National Academy of Sciences
34(2009)
25(2000)
National Petroleum Council
42(2017)
28(2003)
U.S. Geological Survey (Low)
73(2048)
42(2017)
U.S. Geological Survey (High)
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
YEARS

FIGURE II-2



YEARS REMAINING AND YEAR OF EXHAUSTION
OF DOMESTIC OIL AND NGL
(Assuming 35% of Imports)

Constant consumption at 1973 levels
2.5% annual growth consumption

The resource base referred to implies about 200 billion barrels of undiscovered recoverable oil. With this base and a 2.5% annual growth in overall energy <consumption between 1985 and 2020, the FEA projection implies a peak shortfall of oil of 12 million barrels a day in 2000.[11] Of course, a major shortfall would be expected to occur considerably sooner if the lower estimates of Hubbert or Mobil arc correct.

The FEA rejections show that even with a relatively high resource base, rapid development of oil shale and coal synthetics will be necessary to avoid heavy dependence on imports early in the next century unless growth in energy demand is reduced considerably below the relatively modest annual growth rate of 2.5% assumed in the projections. Analyzing the implications of a business-as-usual approach to meeting energy demands, the FEA study reports:

> The conventional approach to supplying future energy demand, even at lower growth rates than have been experienced recently, places a great strain on synthetic fossil fuel production. By the year **2010** the equivalent of **25 million barrels** r da-y of liquids and gas from coal and shale are projected. Even then, imports are estimated to be nearly 10 million barrels of oil equivalent per day. This shortfall could eventually-be limited if coal and synthetic fuel production were to grow at 6% per year, but by 2010 about 3.5 billion tons of con] would have to be mined each year. This would **rapidly deplete** our coal resources, and exhaust available watcr supplies in the shale areas as well as phlace very serious burdens on the environment unless there were some technological breakthroughs.[12]

The FEA analysis shows that conservation and a major shift to electricity would put off development of shale and coal synthetics until after 2000, at which time the major technical and environmental problems they involve might have been solved. However, if the lower NAS estimate of 113 billion barrels of undiscovered recoverable petroleum resources is correct, then the ultimate decline in total domestic production of oil could occur in the latter part of this century, before oil shale and synthetics could be brought on line in an environmentally acceptable way. In this case, a major emphasis on conservation and a shift of demand to electricity may be necessary simply to avoid a drastic increase in imports as domestic production declines.

A recent *Fortune* magazine editorial[13] criticized the more conservative estimates of remaining ultimately recoverable oil by arguing that the API estimate of 35.3 billion barrels of proved reserves is far too low. This contention is based on the fact that the API figure for proved reserves includes only those that are "recoverable under existing economic conditions," while the price of oil has increased four times since the estimates in question were made. Taking this price increase into account, *Fortune's* consultants estimated reserves of 165 billion barrels in existing producing areas, an amount that would certainly mitigate the need for a "crash" sale of OCS lands.

[11] ibid., p. 490.
[12] Ibid.,p. 432.
[13] *Fortune*, December 1974, pp. 10J-11O.

The *Fortune* estimate appears to imply secondary and tertiary recovery rates that are substantially above those that are feasible at present. Of the 437.8 billion barrels of oil-in-place that had been discovered through 1973, 103.1 billion had been produced by the end of 1973, leaving 334.8 billion barrels in place. For proved reserves to equal 165 billion barrels, as *Fortune* suggests, nearly half of the remaining oil would have to be recovered. However, recovery of 165 billion barrels in addition to the 103.1 billion already produced would mean that 268.9 billion of the 437.8 billion barrels of discovered oil-in-place would ultimately be recovered. This implies an average recovery rate of 61.4 percent, almost double the API forecast of 31.6 percent for primary production; this in turn implies ultimate combined secondary and tertiary recovery rates of about 30 percent on the average. In contrast, the November, 1974, report of the FEA Oil Task Force assumed that the maximum combined secondary plus tertiary recovery rates would be below 30% in every region, even taking into account the effects of an oil price of $11.[14] This suggests that the *Fortune* estimate may be considerably overoptimistic. This position is supported by the NAS study, which implied that a total of about 63 billion barrels of oil and natural gas liquids could ultimately be recovered from known fields.

In any case the FEA projections cited above do take into account the effects of high oil prices on the economic viability of more extensive secondary and tertiary recovery. These long-run projections show that with approximately 200 billion barrels of remaining recoverable resources and an $11 oil price, at current rates of development domestic oil production will peak in the late 1980's and will decline below current levels around 2030. Accelerated development of domestic oil resources will hasten this ultimate decline.

The long-term implications of accelerated development of domestic resources were given relatively little attention in the FEA *Project Independence Report* which focused almost entirely on the U.S. position in 1985, and were not considered at all in the Department of the Interior's justification for the proposed 10 million acre OCS leasing program. However, such considerations appear to be of particular importance to any determination to produce OCS oil and gas resources as quickly as possible since the estimates discussed above indicate that the OCS represents a major fraction of our total remaining oil and gas resources.

The Mobil estimates indicate that 54 billion of 88 billion barrels (or 61.4%) of remaining discoverable and recoverable resources will be found on the continental margin extending to a depth of 6000 feet. Some 34 billion barrels (or 38.6% of the total) are expected to be found offshore of the lower 48 states. The 1970 National Petroleum Council estimates of remaining discoverable oil-in-place predicted that 41.5% of the total would be found offshore. The most recent USGS resource estimates are more conservative, showing only 32.5% offshore. However, the major cause for this difference between the USGS estimates and those of Mobil and others lies in the assumptions concerning the amount of remaining undiscovered recoverable oil onshore in the

[14] FEA, "Oil: Possible Levels Of Future Production," exhibits III-8 and III-9, pp. III-15 and 111-16

lower 48 states. The USGS estimates a value between 110 and 220 billion barrels, while Mobil's estimate for the same area is 13 billion barrels (compared to Hubbert's 9 billion barrels), a number supported by the declining discovery rate in the U.S. It has been reported that in the spring the USGS will revise its figures for onshore oil downward by as much as 80%, which should bring the proportion offshore into line with the higher estimates shown in table II-1.

Since the oil and gas on the OCS belongs to the public, the Federal government has a major responsibility to develop these vital public resources wisely, taking into consideration the long-run implications of its development policy. These implications do not appear to have been considered in the discussions of the Department of the Interior's proposed leasing program.

Wise resource planning and management will require a more precise determination of the actual levels of potential **oil and gas** reserves, so that major decisions with far-reaching implications can be based on fact rather than conjecture. One possible justification for an accelerated leasing program would be to promote exploratory drilling or a reasonable alternative in each unexplored frontier area as rapidly as possible in order to identify new reserves. However, the current leasing system places a substantial pressure on oil and gas companies to begin production of reserves at the maximum efficient rate as soon as they have been discovered, even though this may not be in the long-term national interest. It may therefore be desirable to explore alternative leasing systems that would separate exploration to locate reserves from the decision to produce them, since determination of an optimum rate of production is dependent upon a knowledge of the ultimately recoverable amount of oil.

111. EFFECTS ON RETURNS TO THE PUBLIC

The accelerated leasing program proposed by the Department of the Interior will probably create a buyer's market by offering far more acreage than can be absorbed by the oil and gas industry. This in turn may significantly reduce competition and thereby reduce the return the public receives for its resources. The likelihood of flooding the market is high, since the target of 10 million acres that the Department of the Interior seeks to lease in 1975 is over five times the amount that has been leased in any previous year and is about equal to the total acreage that has been leased since 1954.

The possible effects of the accelerated leasing proposal can be inferred from the trends evident in the sales of 1973 and 1974, during which time the amount of new acreage offered increased 96%, from about 698 thousand acres on June 19, 1973 to 1.4 million acres on October 16,]974. Tables III–1 and HI-2 display data from the five sales of new acreage in this period.[1] These tables also show the data aggregated to show the effects of the major acceleration in leasing that took place between the sales of March and May of 1974, when the acreage offered increased about 46% from 931 thousand acres to 1.4 million acres. Lines 4 and 7 of each table show the relevant statistics calculated for the three pre-acceleration sales and the two post-acceleration sales, respectively. By comparing the data for the two sets of sales we can get an insight into the likely consequences of the further acceleration of OCS leasing proposed by the Department of the Interior.

TABLE III-1.—EFFECTS OF INCREASED OCS OFFERINGS ON AGGREGATE MEASURES OF COMPETITION

Date of sale	Number of tracts	Acres (thousands)	Percent of tracts bid on	Percent of tracts leased	Average bonus per acre leased (current dollars)	Average number of bids r tract bid on
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. June 19, 1973		698	80.6	77.5	$2,908	
2. Dec. 20, 1973	147		60.5	59.2		4.2
3. Mar. 28, 1974	2 a	931	55.3	44.2	4,968	3.5
4. Aggregate-Sales 1,2,31	161	815	63.7	57.7	3,560	4.3
5. May 29, 1974	245	1,356	56.2	41.6	2,605	2.9
6. Oct. 16, 1974[2]	287	1,370	51.9	47.4	2,248	2.2
7. Aggregate-Sales 5,6 I	266	1,363	51.1	44.7	2,416	2.5

[1] Columns 2 and 3 in rows 4 and 7 represent per sale averages. Columns 4-7 in rows 4 and 7 are calculated from the relevant data aggregated for the indicated sales.
[2] Data for Oct. 16, 1974 exclude the 10 tracts involved in a royalty bidding experiment.

Source: "Outer Continental Shelf Statistical Summary 1973-75", U.S. Department of the Interior Bureau of Land Management, New Orleans office

[1] U.S. Department of the Interior, Bureau of Land Management, op. cit. In all of the analysis of this chapter we have omitted the data from the royalty bid experiment of the Oct. 16, 1974 sale, as well as the data from the entire July 30, 1974 sale which involved only tracts that had been previously offered, rather than new acreage.

TABLE III-2.–TRENDS IN" THE PROPORTION OF TRACTS LEASED ON THE BASIS OF 1 OR 2 BIDS

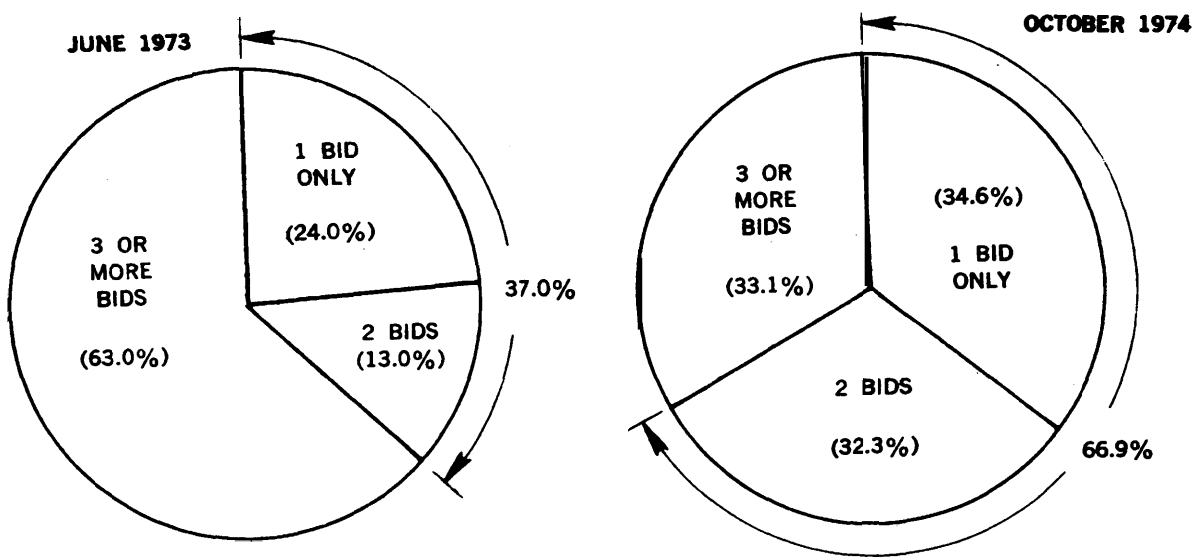
Date of sale	Number of tracts leased	Number leased 1 bid	(3) as percent tracts leased	Bonus accepted on tracts with 1 bid (In millions)	(5) as percent bonus accepted	Number leased with 1 or 2 bids	(7) as percent tracts leased	Bonus accepted on tracts with 1 or 2 bids (In millions)	(9) as percent of total bonus accepted	Percent of tracts bid on receiving 6 or more
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(lo)	(11)
1. June 19, 1973	100	24	24.0	$59.8	3.8	37	37.0	$147.2	9.3	38.5
2. Dec. 20, 1973	87	20	23.0		1.8	31	35.6	95.3		31.5
3. Mar. 28, 1974	91	19	20.9	120.0	5.7	35	38.5	323.6	15.5	22.7
4. Aggregate—Sales, 1 , 2, 3[1]	93	21	22.7	205.9	4.0	103	37.1	566.1	10.9	33.5
5. May 29, 1974	102	41	40.2	262.3	17.8			429.3	29.2	14.6
6. Oct. 16, 1974 ?[2]	136	47	34.6		17.0			562.9	39.4	
7. Aggregate—Sales, 5,61	119	44	37.0	505.3	17.4	149	62.6	992.2	34.2	11.8

[1] Columns 2 and 3 in rows 4 and 7 represent per sale averages. Columns 4-11 in rows 4 and 7 are calculated from the relevant data aggregated for the indicated sales.
[2] Data for Oct. 16, 1974 exclude the 10 tracts involved ina royalty bidding experiment.

Source: "OuterContinental Shelf Statistical Summary 1973-75," U.S. Department of the interior Bureau of Land Management, New Orleans office.

FIGURE III-1

COMPETITION IN OCS BIDDING



Tracts receiving 1 bid, 2 bids, 3 or more bids as a percentage of tracts leased

One important measure **of the** level of **competition in a sale is the** average number of bids on each tract receiving a bid. A Department of the Interior memo justifying the accelerated program recognizes that increased offerings ma-y reduce this average:

> If OCS leasing is accelerated merely by offering more tracts under the existing system, there will probably be a decrease in the average number of bids received on each tract. Furthermore there are strong indications that the lower the number of firms bidding on a **tract, the lower the** level of the winning bid . . . Thus, the government may not be receiving fair market value for those tracts receiving only one or two bids.[2]

As predicted, the sales of 1973 and 1974 revealed a steady decline *in* the average number of bids per tract receiving bids (Table 111-], col. **7) as** the acreage **offered increased. This value** fell from 5.3 bids per tract on June 19, 1973, to **2.2** bids per tract on October 16, 1974, as the acreage offered about doubled.

This decline was accompanied by a considerable increase in the proportion of tracts leased on the basis of only one or two bids (Table III-2, co]. 3-10), the number identified above by the Department of the Interior as being low enough to jeopardize the receipt of fair market value by the public. In the three pre-acceleration sales, 22.7% of the tracts leased received only one bid; these tracts represented only 4.0% of the total bonus money accepted in the sales. In the two post-acceleration sales, 37.0% of the tracts leased received only one id; more importantly, the fraction of the total accepted bonus money represented by these tracts had risen to 17.4%.

The decline in competition is even more appn.rent if we include the tracts that received only two bids. In the pre-acceleration sales, 37.1% of the **tracts leased received only one or two bids, and these tracts represented only 10.9% of the bonus money accepted. But in the post-acceleration sales, 63.0% of the tracts leased, representing 34.1% of the money accepted, received** only one **or two bids. For the most recent completed sale (October 16, 1974) a total of 39.4% of the accepted bonuses came from the 66.9%** of the **tracts that were leased on** the basis of one or two bids.

Another measure of competition in lease sales is the proportion of the tracts bid on that receive a high number of bids. Our analysis shows (Table III-2, col. 11) that the fraction of tracts bid on that received six or more bids has declined rapidly and consistently from 38.5% in the June **19, 1973 sale to 9.6% in the October 16, 1974 sale.**

If the level of the winning bid is in fact directy related to the number of bids on a tract, as the memo cited above suggests, then the data we have presented imply that the increase in offerings in the last two completed sales of new acreaage have probably reduced the return to the public below fair market value. Examination of the average bonus per acre received in the sales of the last two years (Table III-1, col. **6) supports this conclusion. For the three pre-acceleration sales, the accepted bonuses (in current dollars) averaged $3,560, while in the two post-accceleration sales this average to $2,416.** The Department of the Interior apparently expects this decline to continue if the accelerated leasing schedule is implemented; testimony by an

[2] U.S. Congress Federal Offshore Oil and Gas Leasing Policies Hearings, op. cit., p. ? 14.

official of the Department indicates that only $1,500 to $2,000 would be received per acre if 10 million acres are leased in 1975.[3]

To counteract a possible decline in competition resulting from an accelerated leasing program, the Department of the Interior memo the program suggested three actions: (1) banning joint bidding by major producers; (2) speeding up publication of basic geological and geophysical information in order to facilitate participation by smaller oil and gas companies; and (3) improving the bid rejection system.[4]

The first two, which have been incorporated in regulations reposed by the Department of the Interior for future lease sales, should increase competition as anticipated; however, it is not clear that this increase will be adequate to o set the effects of a more than fivefold increase in the amount of acreage to be leased in 1975. A continued decline in competition in general, and in the average number of bids per tract in particular, would give increasing importance to the third item, the Department of the Interior's bid rejection system.

The heart of this system is a discounted cash flow model used to estimate a cash value for the resources expected to be found in each tract offered for leases This model incorporates USGS estimates concerning such variables as the number of productive acres in a tract, the ratio of oil acre feet to total acre feet, the productive life of oil and gas reservoirs, the discount rate, the tax rate, and so on. This estimate, or presale value, is used as a standard against which to measure bids; if the high bid on a tract is below this presale value, the bid may be rejected.

As long as competition for a tract is high, the accuracy of the presale value as an estimate of the true resource value is relatlively unimportant, since competitive forces can be assumed to keep the high bids fairly close to this true value. However, as the number of tracts receiving only one or two bids increases, the presale value becomes a major factor for assuring that faiar market vlaue is received for each tract.

The tract evaluation system has come under sharp criticism in the last year, on the grounds that it may seriously underestimate the true value of the public resources being offered for sale. One analysis of the relation o bids to presale values in the December, 1973 lease sale showed that the total of the high bids on the 89 tracts receiving **bids was** over ten times higher then the total of the presale values on those same tracts.[6] In dollar terms, this difference represented an undervaluation by the Department of the Interior of some $1.3 billion.

Since that sale the Department of the Interior has adopted a major improvement in the tract evaluation system by combining a Monte Carlo simulation procedure with the old discounted cash flow model to produce the **current Range of Values (ROV) model. This new procedure takes much better account of the uncertainties that are inherent in each of the variables used in the model. In the old procedure, a single estimate was used for each variable, and a single value was calculated for each tract using these estimates. With the Monte Carlo technique, each uncertain variable is given a range of probable values.**

[3] Ibid, p. 250.
[4] Ibid., pp. 244-24:1.
[5] U. S. Department of Interior, "Acceleration of Outer Continental Shelf Leasing," Technical paper Oct. 4, 1974, Exhibits 1 and 11.
[6] U.S. Congress Federal Offshore Oil and Gas Leasing Policies Hearings, p. 192.

A random sample value is taken from the range of values for each variable, and a tract value is calculated. This process is repeated some 500 times, with different sample values for each variable each time, and the average of the resulting calculated values is taken as the presale value for the **tract. The advantage of this more complex procedure is that it reveals effects of wide ranges of uncertainty about highly conjectural variables that would be obscured in the older model.**

Implementation of the new system has brought about n significant improvement in the reliability' of presale tract evaluations. While the ratio of total high bids to total presale values calculated with the old system was 10.2 in the December, 1973 sale, the ratio using presale values produced by the new system for the same sale was only 1.85.[7] **However, in more recent sales the ratio has been incensing, indicating a widening gap between presale values and high bids.**

TABLE III-3.–RESULTS OF THE DEPARTMENT OF THE INTERIOR'S PRESALE TRACT EVALUATION SYSTEM

Date of sale	Acres (thousands)	Rejection rate percent of bid on tracts not leased)	Ratio of high bids to assessed value
(1)	(2)	(3)	(4)
June 19, 1973	698		(1)
December 20, 1973	817		10.21 (1.85)
March 28, 1974			4.24
May 29, 1974			5.02
October 16, 1974	1: 370	8.7	1.93
February 5, 1975	2,870	(a)	(4.7)

[1] This ratio was not available for this sale.
[2] The figure in parentheses was calculated using the range of values system that was implemented in the March 28 1974 sale. The higher ratio is based on the presale values actually used in the sale.
[3] Data for this sale were not available at time of writing.
[4] New economic assumptions were used in this sale. The number in parentheses represents the value obtained using the old assumptions.

Source: Data provided by the Department of the Interior.

The figures for the three sales in 1974 (Table III-3, col. 4) show a steady rise, up to a ratio of 5.02 in the October, 1974 sale. This represents a cumulative undervauation of about $1.1 billion for that sale. Furthermore, our analysis shows (Table III–3, col.3) that while the rate of rejection of bids increased sharply to 20.2% when the new system was implemented in the March 28, 1974 sale, it began falling again as the offerings increased in subsequent sales, declining to 8.7% in October. This suggests that while the new Range of Values model is a considerable improvement over the old system, there remain major problems in the model related **to the basic assumptions about geological and economic variables, rather than to the way in which these assumptions are allowed to interact in** the **calculations.**

One major source of the consistent undervaluation by the Department of the Interior may be a relative advantage on the parat of the oil and gas companies in their ability to evaluate and nterpret geological and seismic data. For example, the U.S. Geological Survey,, which provides the estimates of resources for the tract evaluation

[7] **Data provided by the Department of the Interior.**

model, is not adequately staffed even to calculate precisely the actual proved reserves on currently producing OCS tracts.[8] rider these circumstances USGS is clearly not able to evaluate all of the tracts offered in any lease sale in as much detail as the bidders are able to evaluate the relatively smaller number of tracts in which they are most interested.

In view of the importance of OCS resources to the U.S. energy position, it may be desirable to improve the Federal government's ability to estimate the actual levels of resources being offered to private companies for development and production, both to ensure that the public receives a fair return for these resources and to provide the government with the information needed to make wise long-range energy policy decisions. This could involve a change in the current leasing system, as well as an expansion of staff capability. Possible alternatives range from exploration leases prior to production leasing, to direct government sponsorship of an OCS exploratory drilling program.

The second major cause for the underestimation of the value of OCS resources offered for lease appears to be the economic assumptions used in the tract evaluation model. Those that appear most questionable concern the discount rate and the projected prices for the resources, particularly oil.

In the sales held in 1974, the discount rate used was assumed to fall "in the range of 11 to 15%, with a mean of 13%.[9] This is a very high value, in view of the fact that all calculations were done using constant, rather than current, dollars, so that inflationary effects were eliminated. The effect of such a high rate is to discount sharply the benefits received from oil and gas produced in the latter part of the productive life of a lease relative to the heavy capital expenses that occur in the early years of the lease; for example, with a 13% discount rate, benefits received twenty years in the future are deflated by over 90%.

The second area of economic assumptions that appear to bias the presale tract evaluations downward concerns the price for oil that is used to calculate the vlaue of the resources contained in a tract. Specifically, in calculating the preside tract values for the three sales in 1974, the Department of the interior used a price range for oil of from $5.50 to $7.50, with a mean of $6.50; for the sale in February, 1975, a range of $5.00 to $11.00, with a mean of $7.67, was used. These values are based on the assumption that by the time there is production from **the tracts in question the OPEC cartel will have been broken amd the world oil price will have declined enough to bring domestic oil prices to the lower levels.**[10]

There are two difficulties with this assumption. First, it is at least debatable whether the cartel will be broken and whether world prices will ever decline much below the current level of $11 per barrel. This sanguine assumption is not universally accepted in the oil industry; one source informed us that his company saw no more than a 25% chance that the OPEC countries would reduce oil prices below $11. If they are right, then use of an average of $7.67 would undervalue public resources by nerly 33%.

[8] U.S. Congress Federal Offshore Oil and Gas Leasing Policies Hearings, P. 255.
[9] Assumptions provided by the Department of the Interim.
[10] Assumptions provided by the Department of the Interior.

The second difficulty with the use of an average price of $7.67 per barrel is the fact that the President's recent energy message stated the intention to use taxes, duties, and so on to maintain domestic oil prices high enough to encourage conservation of energy and the development of alternative sources of oil, such as oil shale and synthetics from coal.[11] Since FEA's studies of these sources suggest that little supply would be produced at prices much below $10 per barrel,[12] fulfillment of the President's intention would require maintenance of domestic prices near that level even if the world oil rice dropped to $7.00 per barrel or below; indeed, the intention of the President's proposal is precisely to insulate alternative domestic sources from price undercutting by the cartel. But if domestic prices are above world prices, then publicly owned domestic oil resources should be valued at the domestic price. If this is not allowed to **drop much below $10 per barrel, the usc of the $7.67 figure by the Department of the Interior would represent a 25% undervaluation of public resources.**

A second, related issue concerning the prices used by the Department of the Interior in estimating the value of OCS tracts is the assumption that the price of petroleum products remains constant relative to the costs of production throughout the entire productive life of a tract. This life may be as great as thirty years, which would extend well into the period in which total U.S. domestic production is **expected to be declining, and in which the deficit between domestic production and demand will be much greater than the current level. It therefore seems highly questionable to assume that the prices of oil and gas will remain constant relative to production costs over this entire period.**

A **more reasonable assumption seems to be that all relative energy prices will rise as easily accessible resources are exhausted. This latter assumption was supported by one industry source involved in OCS bidding who told us that his company used n "steeply rising" oil price projection in determining the expected value of tracts under consideration. If the assumption that in the long run the relative prices of oil and gas will rise is correct, then tile Department of the Interior's assumption of constant relative** prices will lead to a **consistent undervaluation of offshore resources.**

The net effect of the economic resumptions we have examined is to introduce a significant downward bias in the Department of the Interior's estimates of the value of OCS tracts. In the most recent sale (February, 1975), the Department in fact revised several of these assumptions in a direction that would increase the presale values: the discount rate was lowered to a range of 8% to 12%, with a mean of 10%; while the price range was extended upward to $11.00 at the top end, with a mean of $7.67. **The effect of these changes was to lower the ratio of aggregate high bids to aggregate presale values to 1.93, compared to the value of 4.87** that would have resulted if the old assumptions had been used.[13]

These changes **in economic assumptions, combined with the introduction of the Monte Carlo simulation technique, clearly have produced** a great improvement in the **Department of** Interior's presale

[11] This intention is embodied in the proposed Energy Development Security Act of 1975, title IX of the Administration's proposed Energy Independence Act of 1975, H. R. 2650, 94th Cong., 1st so.%.
[12] FEA, *Project Independence Report*, pp. 132 and 139.
[13] Data provided by the Department of the Interior.

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tract evaluation system. However, the assumption of a constant relative price of oil well below the current world market level remains in effect. If this is invalid, it would lead to a significant. undervaluation of OCS resources. It should be noted that even the ratio of 1.93 (high bids compared to presale values) achieved in the last sale would lead to a cumulative undervaluation of $7.2 billion if applied to a sale of 10 million acres for $15 billion in 1975.

While the problems of undervaluation may have been relatively insignificant when competition was high and single bidding low, the decline in competition that can be anticipated with the offering of 19 million acres for lease in 1975 will make it much more important to reduce or eliminate the remaining inadequacies in the bid rejection system in order to ensure that the public receives a fair value for its resources. It appears that the major remaining problems relate to the assumptions concerning long-run resource prices, and the ability of the U.S. Geophysical Survey to estimate the actual amounts of resources being offered for sale. I he former **can** be remedied relatively easily; the latter could require a substantial addition to USGS's staff capabilities, and perhaps even a change in the process with which the OCS is explored and developed.

IV. PRINCIPAL COASTAL STATE CONCERNS RELATED TO ACCELERATED OCS DEVELOPMENT

The Federal Government's objective to rapidly accelerate development of oil and gas on the Outer Continental Shelf requires that new lands be leased off of or adjacent to the coasts of 16 states that have not had previous experience with this type of developmental Differences between the states and the Government have become more sharply defined in Congessional hearings and recent public hearings on the Department of the Interior's draft environmental impact statement for the proposed 10 million acre sale.

Criticism of the **10** million acre plan and the Department of the Interior's implementation program have been leveled by leading representatives of nearly every coastal state. Even a cursory analysis of the written testimony by Department officials reveal a genuine lack of awareness of the issues and concerns at the State level. The Department's lack of responsiveness has served to unite the coastal states on this issue. While none of the States. have indicated that they will block development of offshore resources at all c osts, they clearly want major changes in the present system for developing these resources. And unless the Department moves quickly in response to some of their demands, it is likely that the States will employ all delaying tactics at their disposal.

Growing coastal state solidarity on the OCS issue is substantively revealed in a major policy statement adopted by the National Governors' Conference on February **20, 1975. The** nine point Policy Position on OCS Energy Resources, which was adopted by a **30 to 1** marg n, reflects in part questions raised in the preceding analysis and by new initiatives in the 94th Congress.[2]

The Governors say that the development of OCS resources should be an integral part **of a** national energy policy, taking into consideration the longer term implications:

> The energy policy developed should reflect not merely the proposed uses or offshore oil and gas, but also a consideration of whether such offshore development is necessary in light of prudent conservation measures and alternative sources of energy.

Recognizing that the OCS "is a great public resource," the Governors' position is that it "should be managed with scrupulous care to insure the long-term productivity of all its resources and a fair economic return to the public."

The Posit on Paper also calls for the separation of the decision to explore for OCS resources from the one to develop and commercially produce the resources.

[1] South Carolina, North Carolina, Georgia, Florida, Rhode Island, New York, Maryland, Delaware, Virginia, Massachusetts, New Jersey, New Hampshire, Oregon, Washington, Maine, Connecticut.
[2] National Governors' Conference, "Policy Position on OCS Energy Resources," Feb. 20, 1975.

One of the purposes of this separation would be to provide the states with detailed resource information needed for planning purposes. Under the present system, the states must plan in a vacuum, relying principally on unconfirmed estimates of offshore reserves. If actual reserves prove much smaller than estimates, the states would then have made unnecessary expenditures on a major planning effort. Conversely, an unexpected major find could cause disruptions beyond state management capacity.

A second purpose is to create a "phased and measured" development program by providing a separate decision point on production and commercial development. Such a program would be established in cooperation with the states and would thus serve as a vehicle for encouraging a rate of development consistent with **each state's ability to manage offshore and onshore impacts and with the long-term energy needs of the Nation. A key element is to provide time for the potentially impacted states to** complete coastal zone management palans authorized under the Coastal Zone Management Act of **1972.** In this way, the states can insure that OCS production plans are consistent with coastal zone management plans and other applicable statutes and regulations.

The Congress already has taken action aimed at accomplishing this separation. Senator Ernest F. Hollings of South Carolina introduced legislation (S. 426) in the 94th Congress which would separate exploration for oil and gas on the OCS from development and production by directing the Secretary of the Interior to conduct by government contract a comprehensive program of exploration on the OCS to determine the existence, extent and location of oil and gas in commercial quantities.

In their Policy Position, the Governors also note that "it is in the public interest to promptly explore the OCS to determine the extent of energy resources that exist." The urgency to determine resources is reflected both in S. **426** and in a bill introduced by Senator Henry M. Jackson of Washington. Senator Jackson's bill (S. 740) calls for the establishment of a National Energy Production Board "to assure early development of energy resources on the public domain and other Federal lands and on the Outer Continental Shelf. . ." The bill would authorize the Energy Board to prepare and carry out a Federal oil and gas exploration program.

The Governors also call for new Federal financial assistance for the required planning to mitigate onshore impacts and to recover costs for developments, particularly new public facilities required by these developments:

> **Since the OCS program is a national one, we believe there** is a clear federal responsibility to assume the necessary related costs of the development. Adequate federal funds should be made available now to States to enable them to stay ahead of the program and plan for onshore impacts. Once the program commences, provision should be made for **federal assistance such as the application of federal compensation for any net adverse budgetary impacts and for the costs of fulfilling State responsibilitiess in the regulation of off- and onshore development**

A spokesman for the National Governor's Conference said that the states do not seek revenue sharing or a "cut in the profits" from the oil and gas revenues, but that they do want to be assured that they will be "made whole" for any losses that may be incurred because of these developments.

The Coastal Zone Environment Act of 1975 (S. 586) introduced by Senator Hollings on February 5, 1975, is intended to provide State and local governments with financial and technical assistance to adequately plan for, accommodate and anticipate growth problems caused by OCS development. It provides a Coastal Impact Fund up to **$200 million per -year, which would be allocated by the National Oceanic and Atmospheric Administration. It also provides up to $10 million for short-term research on specific problems which arise and for interstate planning and coordination; and for consistency between Federal OCS plans and State programs now being developed under the Coastal Zone Management Act.**

In the 93rd Congress, the Senate affirmed its intent to assure that coastal states are fairly compensated for onshore impacts of offshore oil and as production by passage of the Jackson-sponsored "Energy Supply Act of 1974." The Act provided for a special fund, not to exceed $200 million annually and derived from OCS revenues, for grants to impacted coastal zones. Since the House did not act on the measure, Senator Jackson introduced S. 521, which IN-wan identical provision for a special impact fund, in the 94th Congress.

Other legislation introduced in both the House and the Senate **include provisions for compensating states for oil and gas activities off their coasts. Senate bill 130, introdced by Senator Ted Stevens of** Alaska, would establish new provisions for disposition of Outer Continental Shelf **revenues, which under existing public law are deposited in the Treasury of the United States. This bill provides for 25% of the funds be paid to the adjacent coastal state, 25% in equal amounts to "each of the several States other than such adjacent State," and 50% deposited in the Treasury.**

Senator Clifford P. Case of New Jersey introduced S. 826, amending the Coastal Zone Management Act of 1972, which provides for an Affected Coastal States Fund **of $100 million annually in fiscal years 1976 and 1977, and such sums as may be appropriate in subsequent fiscal years. The fund would be established appropriation and no single state would be entitled to more than 15~0 of the total fund annually.**

Congressman Robert E. Bauman of Maryland has introduced a bill (H.R. 1776) amending the Coastal Zone Management Act of 1972, to provide for a $200 million fund derived from a percentage of OCS revenues for fiscal years 1976 and 1977 to compensate impacted coastal states. A perentabe of the revenues from off shore oil and gas would be designated for the fund.

Congressman Bauman also has introduced legislation (H.R. 1777), to suspend Federal oil and gas leasing in areas seaward to State coastal zones until no later than **,June 30, 1976, to allow the coastal states adequate time to complete coastal zone management programs. In H.R. 1236, introduced by Congressman Glenn M. Anderson of California, there are provisions that require delay of all offshore oil**

and gas activities until at least three years after the **award of the coastal zone management program development** grant **to an affected** state.

Senator Charles McC. Maths, Jr., of Maryland introduced S. 81, a **bill to empower the Governors of coastal states to postpone OCS lease sales up to three** years **by filing a request with the** Secretary of the Interior, who may grant the postponement, shorten the postponement, or deny it. A National Coastal Resources Appeal Board would be established for the principal purpose of allowing an grieved **State a second level of appeal in the event that the request or postponement is denied or the time period allowed is shorter than requested.**

V. INDUSTRY'S CAPACITY TO EXPLORE 10 MILLION ACRES

There are serious questions about the ability of the oil and gas industry to explore 10 million acres of new OCS territory between 1975 and 1980, the five year period within which exploration must take lace under the terms of current OCS leases. Extensive analyses by FEA[1] and NPC[2] of the availability of equipment, manpower, and capital for oil and gas exploration and development have agreed that the current supply of mobile drilling rigs, and the worldwide capacity for building new rigs, will be major constraints on exploration for offshore petroleum.

4 The problem can easily be seen by examining the current situation in the U.S. In 1973 and 1974 the Department of the Interior leased a total of 543 OCS tracts with an average size of about 5,000 acres. According to USGS, on the average two exploratory dry holes are needed to eliminate a tract as a t et, while three exploratory wells are needed to justify production.[3] These figures imply that between 1,086 and 1,629 exploratory holes would have to be drilled to completely explore the OCS acreage leased in 1973 and 1974.

As of December, 1974, there were 87 mobile rigs in U.S. waters, of which perhaps 60 would be able to drill in some or all of the water depths of the 1973 and 1974 lease areas.[4] Using an accepted average of four holes per year per mobile rig, it would take these 60 rigs from 4.5 to 6.8 years to explore these 543 tracts. Thus the current rig fleet in U.S. waters could be kept busy for at least the next three or four years simply exploring the tracts that were leased in 1973 and 1974.

If the proposed 1975 leasing program is pursued, about 1,736 additional tracts of 5,760 acres would be leased in 1975. Since the large majority of these will be in water depths exceeding 100 feet, one can understand the problem this sale would create by considering the present and projected availability of mobile rigs with the corresponding depth capacity.

Of the 60 rigs in U.S. waters capable of exploring the 1973 and 1974 lease areas, 44 were capable of drilling in over **100** feet water depth, according to Offshore Rig Data Services.[5] According to an NPC interim report of September, **1974, 11 new mobile rigs then under construction were expected to remain in the U. S., with 15 added in 1975 and 18 in 1976, allowing for attrition in the current fleet.**[6]

4 Assuming that 20 rigs (about one half of annual worldwide construction capacity) would be added each year thereafter to 1980, the total capac-

[1] See footnote 7, ch. 1.
[2] See footnote 8, ch. 1.
[3] U.S. Department of the Interior, Environmental Impact Statement, "Mafia Oil Transportation and Processing," October 1973.
4 offshore Rig Data Services, "The Offshore Rig Location Report," December 1974 and January 1975.
[5] Ibid.
[6] National Petroleum Council, "Availability of Materials, Manpower and Equipment for the Exploration, Drilling and Production of 011—1'974-1976," September 1974, PP. 34-35.

ity for exploration in the next five years can be calculated. The results are shown in the following table:

TABLE V-1.–EXPLORATORY CAPACITY OF THE PROJECTED AVAILABLE FLEET OF MOBILE RIGS

You	Existing rigs plus new annual construction capable of water depths or more	Drilling capacity in walls per year	Capacity in per year (2 wells)	Capacity in production tracts per year (3 wells)
1975	44+11= 55	220	110	73
1976	55+15= 70	280	140	
1977	70+18= 86	352	176	117
1978	88+20=108	432	216	
1979	108+20=128	512		171
Ire	128+20=148	592	296	197
Total			1,194	795

This table suggests that 1200 tracts (about 7 million acres) is a reasonable upper limit to the total number of tracts (over 100 feet water depth) that could reexplored from 1975 through 1980, the year by which tracts leased in 1975 would have to be explored under the present leasing terms. Yet the proposed 10 million acre leasing program would involve over 1700 new tracts. This would exceed the projected exploratory capacity of the industry by about 46 percent, without even considering the requirements for the 543 tracts leased in the last two years or for any tracts leased after 1975. It therefore appears that even if the Department of the Interior were able to lease the entire 10 million acres in 1975, it would be impossible for the industry to explore it thoroughly within the required five year limit. In other words, rig availability rather than acreage under lease appears to be the primary constraint on the development of OCS oil and gas.

This conclusion is supported by the Project *Independence Report* of the FEA. Their analysis **of the availibility from 1972 to 1984 of mobile platforms for exploration and fixed platforms for production led to the following finding:**

> The potential shortage of fixed and mobile drilling platforms is more acute than for any other material and equipment items. Even with optimistic assumptions on mobile platform production, and world fleet movement to U.S. waters, requirements under an accelerated development strategy exceed projected availability by approximately 38 percent; the corresponding shortage for fixed platforms is 36 percent.[7]

The accelerated development scenario referred to above projects a rate of production of about 4.5 million barrels per day from the OCS in 1985, assuming that the world price of oil remains at $11. According to the FEA projection model, which **is** based on an earlier NPC model, to reach this maximum production level would require the leasing of no more than about 25 million acres on **the OCS by 1988, a level considerably lower than that which would be reached if the trend in OCS leasing projected by the Department is continued.** [8]

[7] FEA. *Project Independence Report*, p. 248.
[8] Information provided by FEA staff.

The FEA analysis therefore implies that even the lower leasing level that would be required to reach **25 million acres by 1988 would generate an excess demand for mobile rigs of some 38 percent.**

While recognizing that rig availability will be a constraint in the short run, the Department of the Interior does not view this as an adequate reason for limiting the amount of OCS acreage offered for lease. Instead, they argue that their proposed leasing program would generate market forces that would bring forth the needed supply of equipment to drill the target acreage. A "Technical Paper" in support of the accelerated leasing program published by the Department of the Interior in October, 1974, stated this position:

> Industry representatives indicate that with a dependable, accelerated leasing program, including attractive prospects in new frontier areas, they will either keep newly constructed rigs here or return U.S. registered rigs from overseas. It is their best guess, based upon historical patterns of rig movement to better prospects, that 10 percent or more of the rigs estimated for foreign operations could be available for OCS drilling.[9]

While it is certainly true that leasing in promising frontier areas of the OCS will attract rigs to U.S. waters, the question remains whether enough additional rigs will materialize to be able to explore the acreage that the Department of the Interior proposes to lease. If the above prediction that 10% of the world rig fleet would be made available for U.S. drilling is accurate, then some 26 rigs could be added to the U.S. fleet by the end of 1975.[10] However, even if these operated from 1976 through 1980 at the rate of four wells per rig per year, they would only be able to explore from 173 to 260 tracts. Adding these to our earlier projections gives a total capacity of some 1500 tracts that could be explored by the projected U.S. rig fleet from 1975 through 1980. This still falls short of the 1700 tracts that would be included in the 10 million acres proposed to be leased in 1975, without taking into account either the acreage that remains to be explored from the 1973 and 1974 sales or any additional acreagc lease after 1975.

This apparent problem of long-term excess demand for mobile rigs in the U.S. should be viewed in the context of the worldwide supply of and demand for such rigs. A recent analysis in Offshore magazine of worldwide rig availability over the next 50 years predieted "a rig demand well beyond the capacities of worldwide ship - yards at least through 1982."[11] Thus the predicted shortage of rigs m the U.S. would simply be a part of a worldwide phenomenon. The supply limitations are readily apparent: slippages in delivery are increasing-of 61 mobile rigs scheduled for completion in 1974 worldwide, only 40 were delivered on time; the backlog for new orders is as long as three years; and most of the rigs under order are for foreign use.

This projection of a long-term shortage of mobile rigs is supported b recent analysis of the current mobile rig situation performed by Of -

[9] U.S. Department of tho Interior, "Acceleration of Outer Continental Shelf Leasing," Technical paper, p. 10.
[10] Ibid., p. 11.
[11] *Offshore* Magazine, January 1975.

shore Rig Data Services,[12] which concluded that there would be no significant swing to mobile " construction on the part of world shipyards because of the major difficulties involved in shifting from building ships to building rigs. Thus, any significant increase in U.S. rig construction capablity may require governmental action to allocate shipyard space to mobile rigs.

U.S. will apparently be competing for rigs in a situation of worldwide excess demand, optimistic rejections of large-scale shifts of rigs to U.S. waters as a result of OCS leasing must be viewed with some caution. Experience with recent sales supports this conclusion. For example, the Department of the Interiors Environmental Impact Statement for the December, 1973 MAFLA sale which brought the highest per acre bids ever received) predicted that by the end of 1974 about 26 rigs would be exploring the leased area. In fact, on] six rigs were in the area as of January, 1975.

This analysis implies that 10 million acres is more than the industry can absorb in five ears much less in one year. The industry's own recommendations for OCS leasing support this conclusion. For example, in 1972 the National Petroleum Council, which advises the Secret of the Interior, recommended that the rate of OCS leasing be increase from one million acres per year to 1.6 million acres per year by 1980, and to 2.3 million acres per year by 1985, with a goal of leasing a total of 21 million new acres by 1985.[13] These figures are comparable to those implied in the accelerated development case used by FEA. The Department of the Interior proposal of 10 million acres in 1975 is over six times the rata that the NPC suggested should be reached in 1980.

If the Department of the Interior offers for lease an area that far exceeds the industry's capacity for exploration, it can be expected that only an amount that the industry believes can in fact be explored in five years would receive bids and that an even smaller amount would be leased. This tendency can already be seen in the lease sales over the last two years during which time the Department of the Interior has substantially accelerated the rate of leasing. In 19731.5 million new acres were offered for lease, of which 1.0 million acres (68%) were ultimately leased. In 1974, the Department offered 3.7 million new acres (over 2.4 times the 1973 amount), of which only 1.7 million acres (46 percent) were leased. Considering the limitations on rig availability it is reasonable to asssume that an offering of 19 milion acres may result no more than 3 to 5 million acres being leased.

To conclude, while there is merit to the Department of the Interior argument that substantial and regular offerings of OCS resources would be needed to attract many rigs from overseas and to stimulate new production, there is reason to doubt that the proposed greatly accelerated rate of leasing could stimulate an increased supply of rigs significantly faster than would the more deliberate rata recommended by the oil and gas industry. Furthermore, offering acreage that far exceeds the amount that could be absorbed by the industry would create a buyer's market, which would probably decrease competition significantly and reduce the return the public receives for its resources.

[12] Offshore Rig Data Services, "The Offshore Rig Newsletter," December 1974, p. 3.
[13] See footnote 10, Chapter I.

Attachment G.

Letters Requesting OTA Study

CLIFFORD P. CASE
NEW JERSEY

COMMITTESS
APPROPRIATIONS
FOREIGN RELATIONS
TECHNOLOGY ASSESSMENT BOARD

United States Senate
WASHINGTON, D.C. 20510

January 27, 1975

Emillio Daddario
Director
Office of Technology Assessment
Washington, D.C.

Dear Mire:

As you know, Senator Magnuson, chairman of the Senate Commerce Committee, and Senator Jackson, chairman of the Senate Interior Committee, have jointly requested that OTA undertake a specific analysis of the feasibility of separating exploration of the oil resources of the Outer Continental Shelf frontier areas in the Atlantic, Pacific and Gulf of Alaska from development and production.

I suggest that the OTA staff be directed to work up a proposal along this line for presentation to the Board at its next meeting.

If an assessment such as this is to be of value, as Senators Jackson and Magnuson suggest in their letter of January 23, it must be done quickly since it would be used as a basis for Congressional action that should be completed before the Interior Department's planned leasing of 10 million acres in these frontier areas by the end of this year.

It is my hope the staff can give its attention to this matter without impeding work on ongoing assessments.

Sincerely,

Clifford P. Case

Clifford P. Case
Acting Chairman
Technology Assessment Advisory Board

CPC/vmw
cc. The Honorable Warren G. Magnuson
The Honorable Henry M. Jackson

United States Senate

WASHINGTON. 0.0. 20510

January 23, 1975

The Honorable Clifford P. Case
Acting Chairman
Technology Assessment Advisory Board
United States Senate
Washington, D.C.

Dear Senator Case:

One **of** the most important issues facing the first session of the 94th Congress is the proposed leasing of oil and gas resources in areas of the U. S. Continental Shelf which have not been previously opened to leasing and the impact of such development upon the coastal zones of our coastal states.

The governors of many of the coastal states have begun to urge the Congress to consider changes in the present OCS leasing policy before (1) extensive exploration has identified the general nature and extent of the resources and (2) irrevocable commitments are made for development. One recurring request is that Congress mandate a separation between the exploration and developmental phases of OCS leasing policy. This would permit the government to obtain a better estimate of the size and value of oil and gas resources and the socio-economic and environmental impacts of commercial development prior to leasing for development and production.

We are, of course, following with interest the present OTA assessment related to possible introduction of three energy systems in "the waters off the coasts of New Jersey and Delaware." Although this study is not designed to examine OCS leasing policy, some of its findings certainly will pertain to this issue.

Last year, following hearings by the Committee on Interior and Insular Affairs and the National Ocean Policy Study of the Committee *on Commerce,* the Senate passed S. 3221, the Energy Supply Act of 1974, which would have made major changes in existing policies and procedures. The House of Representatives, however, did not act on the bill. We believe that Congress should act rapidly on amending the Outer Continental Shelf Lands Act this year.

The most appropriate approach to exploration and development is a central issue. In order to assist the Committee on Interior and Insular Affairs and the Senate in its consideration of OCS leasing policy, we believe that OTA should undertake a specific analysis of the feasibility of separating exploration (meaning actual exploratory drilling, but not geophysical assessment) of the OCS frontier areas in the Atlantic, Pacific and Gulf of Alaska from development and production. This analysis should consider all feasible alternatives including exploration by private industry on its own initiative and exploration by private industry under government contract. This analysis should consider:

1. Whether such project should be a pilot effort focused on areas of most concern to adjacent coastal states or an all-out attempt to explore all tracts.

2. The impact upon industry, upon on-going production, upon the rate of development and upon the economic return to the public and to industry.

3. Alternative methods of resource allocation for production and development following exploration and assessment of reserves.

4. Impact on exploration and development of data disclosure to the government and to the public.

5. Alternative bases for determination of drill sites and number of holes necessary.

6. How the program could be managed and the desired or required rate of industry participation necessary.

7. The cost of such program and availability of financial resources to offset costs.

8. Impact upon other legislation.

The Honorable Clifford P. Case
Page 3
January 23, 1975

Our committees are particularly interested in whether any changes will speed up, slow down, or otherwise affect our nation's ability to obtain oil and gas from the OCS assuming such supply is necessary to meet national energy needs.

We urge the Board to approve the request as quickly as is practicable. Our respective staffs will, in the meantime, meet with the OTS staff to further define this project. On behalf of our committees, we wish to thank you for your attention to this matter of urgent concern to the nation.

Sincerely,

WARREN G. MAGNUSON
Chairman
Committee on Commerce

HENRY M. JACKSON
Chairman
Committee on Interior and Insular Affairs

cc: Mr. Emilio Daddario