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BY THE COMPTROLLER GENERAL



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Report To The Congress OF THE UNITED STATES

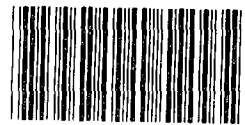
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Policy Needed To Guide Natural Gas Regulation On Federal Lands

The Government needs to establish (1) regulations to guide lessees' activities for the exploration, development, and production of natural gas from Federal lands and (2) a policy on the role of natural gas produced from Federal lands in the context of a national gas policy relative to the Nation's total energy needs and resources.

The Department of Energy has taken little or no action to develop a policy. At the same time, the Department of the Interior is continuing to spend millions to study the production potential of developed fields on the Gulf of Mexico Outer Continental Shelf without the benefit of policy guidance.

A companion report, issued concurrently entitled "Natural Gas Reserves Estimates: A Good Federal Program Emerging, but Problems and Duplications Persist" (EMD-78-68), reviews the Government's efforts to obtain credible estimates of the Nation's natural gas reserves.



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EMD-78-86
JUNE 15, 1979



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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To the President of the Senate and the
Speaker of the House of Representatives

This report addresses the Government's management of the exploration, development, and production of natural gas from Federal lands in the Outer Continental Shelf. We made this review in response to a request by 30 members of the House of Representatives, but because of general interest in this area, we are issuing this report to the whole Congress.

We made our review pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53); and section 207 of the Department of Energy Organization Act (P.L. 95-91 Stat. 565 (1977)).

Copies of this report are being sent to the Director, Office of Management and Budget; the Secretary of Energy; the Secretary of the Interior; and the Chairman, Federal Energy Regulatory Commission.

A handwritten signature in black ink, appearing to read "James R. Stacks".

Comptroller General
of the United States

D I G E S T

The Secretary of the Interior is responsible for proper management of oil and natural gas leases on Federal lands, including the Gulf of Mexico Outer Continental Shelf (OCS). ^{1/} But the Department of the Interior has no regulations to guide lessees in the exploration, development, and production of natural gas from Federal lands, nor is there a policy for the role natural gas from Federal lands will play in meeting the Nation's energy needs. The policy for Federal lands should be developed in the context of a policy for the overall role natural gas, consistent with other energy sources, will play in meeting the needs of the Nation.

{ The Department of Energy, and the Department of the Interior before it, have taken little or no action to develop an overall natural gas policy. }
At the same time, Interior is continuing to spend millions to study the production potential of developed fields on the Gulf of Mexico OCS without the benefit of policy guidance upon which it could base regulatory actions.

Since October 1, 1977, the Secretary of Energy has been responsible for developing an overall national natural gas policy, including natural gas from Federal lands, consistent with the overall national policy. The Congress established an April 1, 1979, deadline for developing a policy, but Energy did not meet it. Presently, adequate coordination does not exist between these agencies to develop a policy and establish and enforce diligence requirements. Energy and Interior are giving other matters higher priority. (See pp. 10 to 13.)

^{1/}Interior's Bureau of Land Management issues leases, while the U.S. Geological Survey is responsible for supervising exploration, development, and production activities on them. (See p. 1.)

Unless a policy on the role of natural gas is developed, the Government will be ill prepared to deal responsibly with the gas supply issues which continue to confront it. The Government needs to establish standards for the timeliness of exploration and development of leases on the Federal domain and for the level of development and production.

NATURAL GAS SUPPLY
POLICY IS NEEDED

The Government has not given sufficient attention to the need for a national policy establishing the role of natural gas. Such a policy is needed to guide natural gas supply actions, particularly regulatory actions affecting exploration, development, and production of natural gas in the Federal domain. (See p. 7.)

{ The only Government requirement affecting the pace of exploration and development is the law which requires a lessee to produce economical quantities of natural gas (or oil) within 5 years or relinquish his lease. There are no requirements controlling how rapidly the natural gas should be extracted. Interior continues a traditional "hands off" policy of letting the lessee determine how the lease is to be explored and developed. (See pp. 7 to 10.)

Congressmen and congressional committees have made numerous requests since 1970 for Interior to develop a policy addressing diligence in exploration, development, and production of OCS leases. Interior has responded primarily by gathering more information on the status of its leases and by explaining its practices to the Congress. The U.S. Geological Survey (Interior) has steadfastly maintained that it is a scientific organization and has no policy development role. (See p. 8.)

PROBLEMS AND DELAYS IN LEASE
EXPLORATION AND DEVELOPMENT

GAO reviewed tracts leased in two lease sales in 1970 and 1972 to evaluate the speed of the lessees' exploration and development activities on them, and the Government's regulation of these activities,

during the period following the 1973 Arab oil embargo. The 235 leases in these sales represent about 18 percent of the Federal leases awarded in the Gulf of Mexico since January 1, 1970. (See pp. 15 and 16.)

Because Interior has no standards for gauging whether lessees are exploring and developing their leases in a timely manner, the matter of diligence cannot be conclusively determined.

However, based on the information examined, GAO believes that an effective program of regulations, penalties, and regulatory actions could have been instituted which would have assured earlier identification and resolution of problems. Consequently, those leases which eventually began production would have begun significantly sooner. (See p. 23.)

Lessees of the majority of the tracts GAO examined had, through exploration and development activities performed in the first 3 years, brought the leases near production or had made a decision to relinquish apparently unproductive leases.

However, progress on others lagged significantly behind. Nearly half of the leases in the December 1970 sale on which economically producible quantities of natural gas had been found were not producing at the end of the primary term. (See p. 14.)

A number of the December 1972 leases were not explored until late in the primary term, and some leases were never drilled. A Survey program to identify leases undrilled for over 2 years was not used as a diligence tool, but only for informational purposes. No lessee was ever ordered to drill an exploratory well. (See pp. 22 and 23.)

Such experiences on the two lease sales provide a reasonable basis for pinpointing the end of the third lease year as the time when the Government should begin to seriously examine the pace of lease exploration and development and act, where appropriate, to ensure adequate progress on leases. (See p. 14.)

The Secretary of the Interior established a Lease Extension Review Committee to assist him in making decisions on applications for suspensions of production beyond the primary lease term. Although the Secretary has decreased the time granted for lease

extensions by placing more stringent time requirements on lessees, he has not addressed criteria for diligence requirements during the primary term, and is now performing staff functions which should have remained at the regional level. (See p. 27.)

GAO identified the activities a few States and foreign governments used to guide lessees' operations during the primary lease term. GAO believes their regulations, actions, and penalties could be adapted for use by Interior. (See pp. 24 to 27.)

PROBLEMS IN REGULATING PRODUCTION
ACTIVITIES BEYOND THE PRIMARY TERM

In response to the natural gas shortages of the 1976-77 winter, the Government took actions directed toward accelerating exploration and development of leases and increasing production. Unfortunately, the Government's actions were misdirected toward leases beyond the 5-year primary term. These actions were expensive and virtually fruitless. (See p. 31.)

In examining developed leases in the Gulf of Mexico OCS for opportunities to increase production, the lack of criteria or effective regulations regarding the level of production prevented Interior from issuing orders to increase production. (Interior could not gauge whether lessees had been diligent with respect to the level of production that could be achieved with the facilities installed.) For example, one lease had been studied four times without conclusive results. (See p. 31.)

Likewise, other studies that have been made of the possibilities for increasing natural gas production from developed and producing leases on the Gulf of Mexico OCS, have suffered the same fate because there are no established criteria for determining the acceptable level of production on the Federal domain. These studies also have been expensive and duplicative. (See pp. 32 to 36.)

Geological Survey has begun a program to make 36 additional such studies initially, and plans to continue the program indefinitely. GAO believes the program has little chance of achieving its purpose of increasing production. (See p. 36.)

Other programs attempting to regulate production from developed fields and leases by setting production rates also have been ineffective. Interior has not been able to establish objective measurements of diligent production.

Two concepts--the Maximum Efficient Rate (contained in the Energy Policy and Conservation Act) and a more recent attempt called Maximum Attainable Rate of production (contained in the OCS Lands Act Amendments of 1978)--are limited in that the rates would be established after production facilities have been installed during lease development. These facilities have physical limits on the level of production that they can achieve.

Other programs, coupled with recommendations on related matters contained in this report, would accomplish the major intent of the legislation establishing these concepts. Therefore, the legislative requirements that rates of production be established should be repealed. (See pp. 41 to 44.)

RECOMMENDATIONS TO THE SECRETARY OF ENERGY

The Secretary should:

- Fulfill the requirement mandated by the Congress in the Energy Organization Act to develop a policy which establishes the role of natural gas in meeting the Nation's energy needs. The policy should specifically address the role of natural gas from the Federal domain.

- Establish and issue regulations in cooperation with the Secretary of the Interior and the Chairman, Federal Energy Regulatory Commission, to govern the diligence of lessees in the exploration, development, and production of natural gas on the Federal domain. To enhance the enforcement of diligence, the regulations should require that lessees who have not submitted a development plan by the end of the third year of the primary term must submit a statement on (1) problems that have prevented its preparation, (2) actions the lessee is taking to overcome the problems, and (3) the estimated time needed to take the actions. The regulations should provide for application of currently authorized sanctions against lessees who fail to meet the diligence requirements, both during the primary term and afterwards. If he finds the penalties used by other governments' agencies,

as discussed in this report, to be useful, he should seek congressional authority to use them.

- Include a schedule for issuing the policy and regulations in his written statement to the House Committee on Government Operations and the Senate Committee on Governmental Affairs required under section 236 of the Legislative Reorganization Act of 1970. (See p. 50.)

RECOMMENDATIONS TO THE SECRETARY OF THE INTERIOR

The Secretary should:

- Defer efforts to review additional Gulf of Mexico fields for the purpose of identifying opportunities for increased production until such time as a policy and implementing regulations for natural gas production have been established which provide the Secretary a basis for requiring specific development and production actions by the lessee.
- Provide the Secretary of Energy full assistance and cooperation in implementing our recommendations to the Secretary of Energy, including the use of Interior personnel to further the objectives of Energy's Oil and Gas Reserves Data Validation Program. (See p. 51.) 1/

RECOMMENDATIONS TO THE CONGRESS

The Congress should:

- Not appropriate funds for the Geological Survey OCS Reservoir Shut-in/Diligence Program until the policy and regulations have been issued and the Survey's program re-justified.
- Repeal those portions of the Energy Policy and Conservation Act and the OCS Lands Act Amendments of 1978 (section 606(d)(1)(A), (B)) which require the Government to establish, enforce, and report on production rates on Federal lands. (See p. 51.)

1/ This program is more fully covered in the companion report "Natural Gas Reserves Estimates: A Good Federal Program Emerging, but Problems and Duplications Persist" (EMD-78-68).

AGENCY COMMENTS

Energy disagreed that the Secretary should develop a policy establishing the role of natural gas in meeting the Nation's energy needs, including the role of natural gas from the Federal domain. Energy said the policy was contained in the National Energy Act. GAO disagrees. The National Energy Act addresses the pricing of certain categories of natural gas, but does not address (1) the role of natural gas relative to other energy supplies, (2) the pace of exploration and development, or (3) the level of development and production. (See p. 11.)

Energy agreed that the Secretary should issue regulations establishing diligence requirements for natural gas leases on Federal lands. (See p. 11.) But Energy disagreed that GAO's data and analyses adequately support GAO's recommendation on how to regulate the speed of exploration and development activities during the primary term of the leases. GAO disagrees. GAO believes the number of leases selected for examination and the period of time covered by GAO's review provided an adequate basis to assess the lessees' development operations and the Government's regulation of their operations. (See pp. 26 and 27.)

Interior agreed that an overall national policy for the role of natural gas was needed, but contended that a diligence policy already existed for leases past the primary term. GAO notes, however, that the policy does not cover diligent exploration and development, but merely outlines the conditions that should exist before requiring a lessee to accelerate production from an already developed field or lease. (See pp. 9 and 10.)

Energy and the Interior disagreed that the Geological Survey's Reservoir Shut-in/Diligence program should be deferred and not funded until a policy and regulations are established and the program rejustified. Energy said the data collected could be useful in developing diligence criteria and regulations. Interior stated that the studies would provide data needed for development and testing of new approaches to regulation. Studies performed so far, however, have been fruitless and expensive because no criteria have been established for determining the acceptable level of production on Federal lands. (See pp. 38 to 40.)

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ABBREVIATIONS

DOE	Department of Energy
EIA	Energy Information Administration
EPCA	Energy Policy and Conservation Act
FERC	Federal Energy Regulatory Commission
FPC	Federal Power Commission
GAO	General Accounting Office
MAR	Maximum Attainable Rate
MER	Maximum Efficient Rate
MPR	Maximum Production Rate
NAS	National Academy of Sciences
OCS	Outer Continental Shelf
RFF	Resources For The Future, Inc.
USGS	United States Geological Survey

CHAPTER 1

INTRODUCTION

Thirty members of the U.S. House of Representatives, primarily from the Northeastern United States, requested that we inquire into various interstate natural gas issues. Because of the complexities of the issues, we are issuing two reports in response to the request. Although this report addresses Federal regulation of the exploration, development, and production of natural gas in the Federal domain of the Outer Continental Shelf (OCS), the regulatory framework for crude oil is very similar.

FEDERAL MANAGEMENT AND REGULATION OF OCS LEASES

Until the passage of the Department of Energy (DOE) Organization Act (August 4, 1977, to be codified as 42 U.S.C. 7101), the responsibility for setting energy policies and developing regulations to implement those policies was fragmented in many departments and agencies.

Two major purposes behind the establishment of DOE were to (1) help achieve effective management of the Federal Government's energy functions and (2) formulate and implement a national energy policy to deal with the short-, mid-, and long-term energy problems of the Nation. DOE was activated by the President on October 1, 1977, under authority of the DOE Organization Act. With the establishment of DOE, the major role of managing oil and natural gas activities is shared with the Department of the Interior.

OCS Lands Act

The OCS Lands Act of 1953 (43 U.S.C 1331) directs the Secretary of the Interior to develop and administer regulations that will ensure proper management of oil and gas leases in the OCS. Once the Bureau of Land Management, Department of the Interior, has issued a lease, the U.S. Geological Survey (USGS) is responsible for reviewing and approving exploration and development plans and for supervising the exploration, development, production, and other operations authorized by the lease.

Regulations issued by the Secretary of the Interior are contained in 30 CFR 250 (Code of Federal Regulations)--Oil and Gas and Sulphur Operations in the OCS. These regulations establish USGS' responsibility for overseeing OCS oil and gas development.

OCS management is carried out by three regional offices-- Eastern (Washington, D.C.), Gulf of Mexico (Metairie, Louisiana), and Western (Menlo Park, California). Each region is under the authority of a Conservation Manager who must ensure that all operations conducted on a lease by or on behalf of a lessee comply with the regulations. Area Oil and Gas Supervisors in each region, with the approval of the Chief, Conservation Division, have issued OCS orders implementing the regulations issued by the Secretary. They also oversee the activities of the lessees.

The OCS Lands Act Amendments of 1978 (to be codified as 43 U.S.C. 1801), approved September 18, 1978, amended the OCS Lands Act of 1953 and modified some of the responsibilities of the Secretary of the Interior. The Secretary is required to determine whether a potential lessee has been diligent in the exploration, development, and production of other leases owned by the lessee before a new lease could be issued to that lessee. (See p. 12.) Also, Maximum Efficient Rate (MER) of production (see p. 41) would be supplemented by a Maximum Attainable Rate (MAR) of production (see p. 43) for significant fields on the OCS.

Types of leases

The OCS Lands Act Amendments of 1978 deals with two types of leases--those maintained under section 6 of the act and those leased under section 8. Section 6 leases, originally issued by the States, came under Federal jurisdiction with the passage of the OCS Lands Act of 1953. Section 8 leases originate with Interior.

The act requires that oil and gas leases be issued on a competitive bidding basis. Leases are awarded through sealed bids and, at the discretion of the Secretary of the Interior, on the basis of a

- cash bonus with a fixed royalty;
- variable royalty with either a fixed work commitment, a fixed cash bonus, or both;
- cash bonus or work commitment with a fixed cash bonus, and a sliding royalty;
- cash bonus with a fixed share of the net profits of no less than 30 percent;
- fixed cash bonus, with the net profit share reserved as the bid variable;

- cash bonus with a fixed royalty and a fixed share of net profits of no less than 30 percent; or
- work commitment with a fixed cash bonus and a fixed royalty.

The Secretary also may institute a bid system, with no more than one bid variable, different from those listed above unless either the House of Representatives or the Senate disapproves.

Diligence requirements

Diligence, as used in this report, includes the lessees' timely performance of activities for exploration, development, and production of oil and natural gas. By regulation (30 CFR 250.33) and terms of lease agreements, Interior may require the lessee to diligently drill and produce such other wells as the Secretary or Supervisor 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. This provision has been contained in onshore oil and gas leases since 1920 and in offshore leases since 1954. The OCS Lands Act, implementing regulations, and the leases do not provide a definition of diligence.

USGS' general practice has allowed the lessee to choose if and when a well will be drilled. No lessee has been required to drill a well on the basis of a failure to perform timely drilling operations. USGS only has ordered a well to be drilled when a reservoir on a Federal lease extended into an adjacent State lease. USGS ordered wells to be drilled in such cases to avoid letting the State lessee drain the portion of the reservoir on the Federal lease.

USGS requires that the lessee apply for and receive permission to drill wells. USGS then reviews the lessees' development plans to ensure that they are safe and that precautions are being taken to prevent pollution and waste, but makes no judgments concerning the level of production the facilities will allow.

The OCS Orders issued by the Conservation Manager, Gulf of Mexico, primarily dealing with diligence in the Gulf of Mexico OCS leases are 4, 11, and 14. OCS Order 4--Suspensions and Determination of Well Producibility--sets the requirement for determining when a well may be capable of producing quantities sufficient to cover the cost of the well. OCS Order

11--Oil and Gas Production Rates, Prevention of Waste, and Protection of Correlative Rights--outlines for lessees how production rates should be set for gas reservoirs and wells. OCS Order 14--Approval of Suspensions of Production-- outlines how lessees receive approval to retain a lease without initiating production or drilling activity.

A lease nearing the expiration of the primary 5-year term may be extended under the following circumstances and sections of the regulations. The first is called a suspension of operations or production or both under 30 CFR 250.12 (d)(1), and the second is an extension of leases by drilling or well reworking under 30 CFR 250.35. Under 30 CFR 250.12 (d)(1), if a well has been drilled and determined by USGS to be capable of being produced in paying quantities, USGS may direct or approve a suspension to facilitate proper development of the lease, or to install adequate transportation facilities. Although suspensions may be approved initially for up to 2 years, and for succeeding periods not exceeding 1 year each, initial and subsequent suspensions have normally been granted for 1 year.

Under 30 CFR 250.35, a lease also may be extended while drilling or well repairs are being conducted and 90 days beyond the completion of such operations. In addition, the lease may also be extended if it has been included in a unit plan of development approved by USGS. 1/ If not extended under these conditions, the lease expires. The lease can be voluntarily relinquished at any time.

Without rescinding Interior regulations and OCS orders, the DOE Organization Act transferred to DOE the responsibilities from Interior to establish diligence requirements for operations conducted on Federal leases, including procedures for the Secretary of the Interior to grant or order suspension of operations or production, and to establish production rates for Federal leases. The act directs the Secretary of Energy to consult with the Secretary of the Interior during preparation or revision of these regulations.

1/When a reservoir is found to extend over two or more leases, the lessees may enter into a unit plan agreement to operate all leases as a single unit so that duplicate facilities are not installed and all lessees share appropriately in the natural gas or oil produced from the reservoir.

Leasing Liaison Committee

Section 210 of the DOE Organization Act established a Leasing Liaison Committee (1) to serve as an executive level coordinating mechanism and focal point for inter-Departmental cooperation on Federal energy leasing, and (2) to assure timely and efficient coordination between DOE and Interior on energy-leasing matters. The committee is composed of eight members; four from each Department, including the Assistant Secretary for Energy and Minerals, Department of the Interior. Although the Committee is not a policy-making body, it may address policy issues and make recommendations to the respective Secretaries. The Committee is scheduled to meet quarterly.

Federal Power Commission

The Federal Power Commission (FPC) was abolished on October 1, 1977, pursuant to the DOE Organization Act, and its responsibilities under the Natural Gas Act of 1938 (15 U.S.C. 717) generally were transferred to the Federal Energy Regulatory Commission (FERC), Department of Energy. These responsibilities included

- establishing and enforcing rates and charges for transportation and sale of natural gas and
- issuing and enforcing certificates of public convenience and necessity for construction of facilities, abandonment of service or facilities, etc.

SCOPE OF REVIEW

This report concentrates primarily on how Interior has managed natural gas exploration, development, and production by lessees in the Gulf of Mexico. The Gulf of Mexico was chosen because it is the most developed OCS region and supplies almost all of the natural gas obtained from OCS areas. The Gulf of Mexico OCS supplies about 18 percent of the Nation's natural gas consumption. We focused on whether Interior, through USGS, ensured that lessees had diligently developed and produced their leases in a proper and timely manner. We examined the manner in which producers on the Gulf of Mexico OCS fulfilled their lease obligations.

We examined the role DOE will have in setting diligence requirements in all OCS areas. We also examined the role FERC has in ensuring OCS production of natural gas and the interaction between Interior and FERC.

In conducting the review, we:

- Interviewed officials of Interior headquarters, USGS headquarters, and the USGS regional office in Metairie, Louisiana, DOE and FERC headquarters, and of various petroleum companies.
- Examined applicable regulations, policies, procedures, and practices pertaining to Federal management and enforcement on the OCS.
- Reviewed 235 leases, or 74 percent of those sold in 1970 and 1972, to evaluate the extent of exploration and development activities, particularly during the period following the 1973 Arab oil embargo.
- Analyzed the exploration and development problems experienced by the five companies named in our companion report (EMD-78-68). We originally visited these companies to evaluate their estimation and reporting of natural gas reserves. Two companies submitted comments. Their comments have been evaluated and considered in preparing this report.
- Interviewed officials of Louisiana and Texas, and of the United Kingdom and Norway.

CHAPTER 2

A NATURAL GAS

POLICY IS NEEDED

The Government needs to establish a national policy for natural gas. Natural gas is an important fuel source for the Nation, supplying over one-fourth of the total energy we use with about 19 percent supplied from the Federal lands on the OCS. However, one important aspect of the national energy issue which has not received sufficient attention is the need for a policy on the role of natural gas produced from Federal lands in the context of a national gas policy relative to the Nation's total energy needs and resources. The Interior and Energy Departments have been unsuccessful thus far in establishing such a policy. Furthermore, the Secretary of Energy is required by the DOE Organization Act to develop one. The policy is needed to guide natural gas supply actions, particularly regulatory actions affecting exploration, development and production of natural gas in the Federal domain.

The only Government requirement affecting the pace of exploration and development is the law which requires the lessee to be producing economical quantities of natural gas (or oil) within 5 years or relinquish the lease. There are no requirements regarding the level of development and production; that is, how rapidly the natural gas should be extracted.

PAST EFFORTS TO DEVELOP A NATURAL GAS POLICY LARGELY UNSUCCESSFUL

Interior did not develop a policy and regulations for exploration, development, and production of natural gas during the primary term of leases on the Federal domain. Since Interior has been issuing leases for oil and gas on the OCS following passage of the OCS Lands Act of 1953, it has allowed lessees absolute discretion in directing the development and production decisions for the entire 5-year primary term. Even development of leases past the primary term was liberally regulated until recently, when the requirements were made more stringent.

Because natural gas reserves in the U.S. were sufficient to meet demand until the late 1960s, Interior gave no attention to establishing a natural gas policy. Interior has slowly begun to address that portion of the policy which covers diligence by OCS lessees.

About 1969, when demand for natural gas increased significantly, new discoveries were inadequate to maintain reserves at a level sufficient to meet the increased demand. The early 1970s saw the beginning of a leveling and subsequent gradual decline in natural gas production, but the number of customers continued to increase each year. The increase in consumer demand combined with the continuing decline in marketed production created an increasingly severe energy crunch situation, especially during short-supply periods, such as that experienced during the 1976-77 winter.

With the continued threat of gas supply shortages in the forefront, various parties, including State regulatory commissioners, congressmen, and members of the public, since 1970, have called for a policy addressing diligence in exploration, development, and production of OCS leases. Interior has responded primarily by gathering more information on the status of its leases and on explaining its practices to the Congress and the public. Despite an obvious need, a policy to help alleviate the shortages has not been developed.

USGS, primarily responsible for regulating exploration, development, and production in the OCS, has steadfastly maintained that it is a scientific organization and has no policy development role. The departmental level of Interior experienced frequent turnovers leaving gaps in policy formulation and direction including that concerning diligence. (See app. III.)

Perhaps Interior's most extensive effort to establish a diligence policy came with the establishment of an Interior task force on February 3, 1975. The task force was instructed by the Assistant Secretary for Energy and Minerals to review the regulations under the OCS Lands Act and the terms of onshore and offshore leases to determine what changes could be made to ensure adequate diligence in the exploration, development, and production of the OCS lands under lease.

The task force, which submitted its final report on June 4, 1975, concluded that Interior had sufficient authority to ensure diligence under existing regulations and that the lessees should be allowed to develop their leases as they wished during the primary term. Further, the task force said, if society wanted either production or lease relinquishment sooner than 5 years, the primary term of the lease, as specified by law, could be reduced by new legislation.

The Deputy Solicitor, Department of the Interior, advised us that under existing regulations the Government could set

policy for diligence in exploration and development during the primary term for future lease sales, but he was uncertain about tracts already leased.

The task force's report to the Assistant Secretary for Energy and Minerals contained two draft OCS orders. One draft order, dealing with suspensions of production (issued after the primary term), subsequently was published as Gulf of Mexico OCS Order 14. The other draft order, which would have provided authority to require production of nonproducing reservoirs "behind the pipe" ^{1/} was not adopted. The task force believed it was inappropriate for the Government to tell the lessees how fast to develop leases, or decide how lessees should use their resources.

The task force could have recommended policy for every stage of the lessees' activity--exploration, development, and production. Instead, the task force work provided only limited guidance in the development of leases after the primary term.

At Interior, the current emphasis is on further studies and it continues to make decisions concerning lease extensions and field development on a case-by-case basis without the benefit of policy or procedural guidelines.

Agency comments and our evaluation

Interior agreed that an overall national policy for the role of natural gas was needed but contended, in its comments on our proposed report (see app. II), that a diligence policy already existed. Interior agreed, however, that no diligence requirements exist for leases during the primary term when most of the exploration and development activities and decisions take place.

We examined all the documentation which Interior contended was its "diligence policy" for leases or fields. The "policy," however, does not cover diligent exploration and development, but merely outlines the conditions that should

^{1/}When several reservoirs lying one above another are pierced by a single well, for technical reasons all are not produced simultaneously, but are produced serially, beginning with the deepest. Those awaiting their turn for production are referred to as being "behind the pipe"--the well bore casing.

exist before requiring a lessee to accelerate production from an already developed field or lease. Interior's documentation indicates that acceleration must be technically feasible, economically sound, and legally possible. Although this statement addresses the pragmatic realities of production, it does not address or give guidance to policy aspects, such as

- the pace of exploration of a lease,
- the pace of development,
- the level of development, or
- the level of production.

DOE NOW RESPONSIBLE FOR
ESTABLISHING A NATURAL GAS POLICY

The Congress concentrated in DOE broad responsibility for setting energy policies, including a policy for the role of natural gas. DOE also was given responsibility for issuing diligence requirements to guide OCS lessees' operations. The Congress established a deadline for developing the policy, but DOE did not meet it.

A natural gas policy is needed to (1) help meet present and future energy needs consistent with national economic, environmental, and social goals and (2) reduce our dependence on foreign supplies.

The DOE Organization Act transferred the responsibility for setting diligence requirements from Interior to DOE and required that the Secretary of Energy submit to the Congress by April 1, 1979, a proposed National Energy Policy Plan which would include a policy for natural gas. The plan that was submitted to the Congress on May 7, 1979, did not include the following elements for natural gas:

- Production objectives for periods of 5 to 10 years necessary to satisfy projected needs of the United States.
- Strategies and resources needed to achieve production objectives.
- Legislative, administrative, and regulatory actions needed to achieve production objectives of the plan.

--A review and appraisal of procedures and practices (including regulatory) employed by the Federal Government to achieve the purposes of the plan.

Agency comments and our evaluation

The Director, Office of Leasing Policy Development, who is responsible for developing diligence requirements, said it would take at least a year to review existing regulations before plans for new regulations could be developed. One reason for the long delay is that developing diligence requirements was not a top priority item at DOE. Another principal factor, DOE said, in its comments on our proposed report (see app. I), is that:

"...when DOE inherited DOI's diligence responsibilities on October 1, there were no diligence regulations in place nor were there any criteria developed by DOI to evaluate lessees' diligence. DOE, therefore, has had to start from the beginning to develop such criteria."

We share DOE's view that diligence requirements are non-existent.

DOE, in its comments (see app. I), said a policy for natural gas was developed and was contained in the National Energy Act. The National Energy Act is composed of five laws, one of which is the Natural Gas Policy Act of 1978 (Public Law 95-621, 92 Stat. 3351, approved Nov. 9, 1978). This law addresses how the prices are to be set for new natural gas, deregulation of certain categories of gas, incremental pricing, emergency authority, and curtailment priorities. The act does not cover the policy elements outlined above. Therefore, no policies exist for the role of natural gas.

DOE HAS NOT RESOLVED COORDINATION PROBLEMS

Recent legislation has given DOE, Interior, and FERC interlocking responsibilities for setting energy policy and implementing regulations for the OCS, and for assuring that the policies and regulations are followed. These agencies, therefore, will have to closely coordinate these activities and DOE should take the lead in assuring such coordination.

The DOE Organization Act assigned to DOE the responsibilities formerly held by Interior for establishing

- diligence requirements for operations conducted on Federal leases, including procedures for the Secretary of the Interior to follow in granting or ordering suspensions of operations or production and
- rates of production, including Maximum Efficient Rate of a reservoir.

The OCS Lands Act Amendments of 1978 assign responsibility to Interior for

- determining whether a lessee has been diligent on existing leases before being granted another and
- establishing and setting a Maximum Attainable Rate (MAR) of production of a field.

Furthermore, the Natural Gas Policy Act of 1978 assigns FERC the responsibility for issuing regulations to ensure that contracts for the sale of natural gas from the OCS will be for a minimum of 15 years unless the economic life of the reservoir is less. This provision and the implementing regulations are important because they tend to stretch out production from OCS leases.

As a result of these laws, coordination is required by all three agencies to

- develop the overall natural gas policies,
- enforce the policy and implementing requirements,
- establish production rates,
- determine the minimum contract term for sale of natural gas,
- order producer actions on developed fields and leases, and
- ensure adequate supplies of natural gas for the interstate market.

Presently, adequate coordination does not exist between DOE, FERC, and Interior to conduct these activities.

Since DOE is required to develop an overall policy for the role of natural gas and implementing diligence requirements, it should take the lead in providing the coordination. The Leasing Liaison Committee established under the

DOE Organization Act (see p. 5) is a vehicle that can be used to coordinate these activities. This Committee is already set up and contains key officials in both departments that are essential to coordination. FERC, however, would have to be represented on the Committee.

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The lack of implementing regulations to guide USGS' monitoring of OCS lessees' operations and the lack of a policy defining the role natural gas from Federal lands should play in the context of an overall natural gas policy in meeting the Nation's energy needs has led to regulatory and other problems.

Chapter 3 discusses problems experienced in regulating lessees' operations during the 5-year primary term, while chapter 4 discusses problems experienced in attempts to regulate lessees' activities beyond the primary term. Chapter 4 also focuses on Interior's studies of developed, producing leases and fields, with the emphasis on increasing production.

CHAPTER 3

PROBLEMS AND DELAYS IN LEASE

EXPLORATION AND DEVELOPMENT

The Government should take an active role in regulating lessees' exploration and development operations during the primary term. Most of the lessees from the two lease sales we analyzed had conducted their exploration and development activities by the end of the third lease year to the extent that production was near or the tract had been identified as unproductive. However, progress on other leases lagged significantly behind. Nearly half of the leases in the December 1970 sale on which economically producible quantities of natural gas had been found were not producing at the end of the primary term. A number of the December 1972 leases were not explored until late in the primary term, and some were never drilled.

because most leases were near production or the tract had been identified as unproductive by the end of the third lease year, we believe this is an appropriate and opportune time for USGS to evaluate the progress of the lessees. Action should be taken to assure that lessees take effective and expeditious action to resolve problems causing delays for leases not nearing production or determined to be unproductive.

We identified the activities which a few States and foreign governments used to guide lessees' operations during the primary lease term. We believe their regulations, actions, and penalties could be adapted for use by Interior.

GULF OF MEXICO OCS LEASE TRACTS

The Gulf of Mexico OCS tracts usually contain about 9 square miles. Frequently, a geologic structure providing potential oil or gas reservoirs, such as a salt dome or anticline, may lie across tract boundaries with some tracts on a more favorable part of the structure. Tracts believed to be on the best part of the structure usually bring the highest bids.

If a company wins more than one lease, it ranks them by the probability of finding oil or gas. Companies usually explore leases with the highest potential first.

The lessee must continually evaluate new information being developed about his leases and the leases of others. The information from exploratory drillings, either on his lease or an adjacent lease which might be on a more favorable part of the substructure, could influence the future action taken on the lease. The decision may be to drill additional exploratory wells, order development equipment, reevaluate the lease, assign the lease to another party, relinquish the lease, or do nothing.

Exploratory wells are drilled to locate the oil or gas and, if successful, to determine where the production equipment should be installed. In shallower water, a single exploratory well may be converted to a producing well, whereas in deeper water, the exploratory wells are normally abandoned and a development platform, which has been fabricated onshore, is installed. A drilling rig is then moved onto the platform and production wells are drilled.

Before a lessee can develop a lease, a development plan must be submitted to and approved by USGS. The development plan includes such things as location and number of wells to be drilled and the size of the production platform to be installed.

OUR ANALYSIS OF EXPLORATION
AND DEVELOPMENT ACTIVITIES
ON SELECTED LEASES

Although the majority of the leases we examined were near production or were being relinquished, some of the leases showed little or no progress. Over 40 percent of the 66 leases in the December 1970 sale, identified as being able to produce, had no production or development drilling 3 or 4 years following their discoveries. The December 1972 leases were similar to the 1970 leases in their exploration and development activities, and 16 percent of these leases were never drilled during the primary term.

Even though USGS had knowledge of lessees' exploration and development problems, little was done to help resolve them. We believe that an effective regulatory program could have been instituted and would have assured earlier identification and resolution of problems. Consequently, those leases which eventually began production would have begun significantly sooner.

We reviewed the 119 leases sold on December 15, 1970, and the 116 leases sold on December 19, 1972, to evaluate

the speed of the exploration and development activities on them. We wanted to evaluate the lessees' exploration and development activities, and the Government's regulation of these activities, during the period following the 1973 oil embargo by the OPEC countries. Therefore, we selected the leases sold in December 1970 and December 1972. The 235 leases in these sales represent about 18 percent of the Federal leases awarded in the Gulf of Mexico since January 1, 1970.

The tracts were leased for \$2.513 billion and had brought \$0.455 billion in rents and royalties as of March 1977. The 58 producing leases had produced 135 million barrels of oil and 2.413 trillion cubic feet of natural gas through December 1976. The status of the 235 leases is shown in the following table.

Table I
Status of Leases as of March 1977

<u>Status</u>	<u>1970 leases</u>		<u>1972 leases</u>	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Producing	38	32	20	17
Producible shut-in (note a)	28	24	19	16
Relinquished	50	42	4	3
Still in primary term	<u>3</u>	<u>2</u>	<u>73</u>	<u>63</u>
Total	<u>119</u>	<u>100</u>	<u>116</u>	<u>b/99</u>

a/A lease having oil or natural gas in producible quantities, but which is not being produced.

b/Difference due to rounding.

Our companion report (EMD-78-68) discusses our visits to five companies to review their estimates of natural gas reserves and the support for the estimate they reported to Government agencies. We also discussed their exploration and development activities on the leases they obtained in the two lease sales we selected for review.

According to company representatives, nearly half of the December 1970 leases were relinquished because no oil or gas was discovered, or sufficient oil or natural gas was not discovered to economically justify production.

Several company officials said that the leases having the best potential receive the highest bonus and are the first to be explored and developed. Our analysis supported their statements in that the producing leases had brought a higher average bonus than the producible shut-in leases, and the producible shut-in leases had brought larger average bonuses than the relinquished leases, and primary term leases without qualifying wells (wells capable of producing in paying quantities). Also, the leases drilled in the first lease year had brought a higher average bonus than those drilled in subsequent years. The initial drilling activity commenced within the first 2 years on 91 percent of the December 1970 leases and 76 percent of the December 1972 leases.

Our analysis showed that the bonus invested in the lease provides, in many cases, a strong economic incentive for the lessee to explore, develop, and begin production of a lease as rapidly as possible. Those leases with the highest average bonuses were drilled during the early years of the lease term.

However, some lessees win several leases with varying prospects, as reflected in the size of the bonus. In such cases, the economic incentives influence the lessees to explore and develop the more attractive and expensive leases first. Other factors influencing the time taken to bring a lease to production include geological, business, and regulatory problems.

For the December 1970 leases, 32 of the 43 initial development platforms installed by March 1977 were installed in the first 3 years of the lease term. For the December 1972 leases, 17 of the 21 development platforms installed by March 1977 were installed in the first 3 years of the lease term.

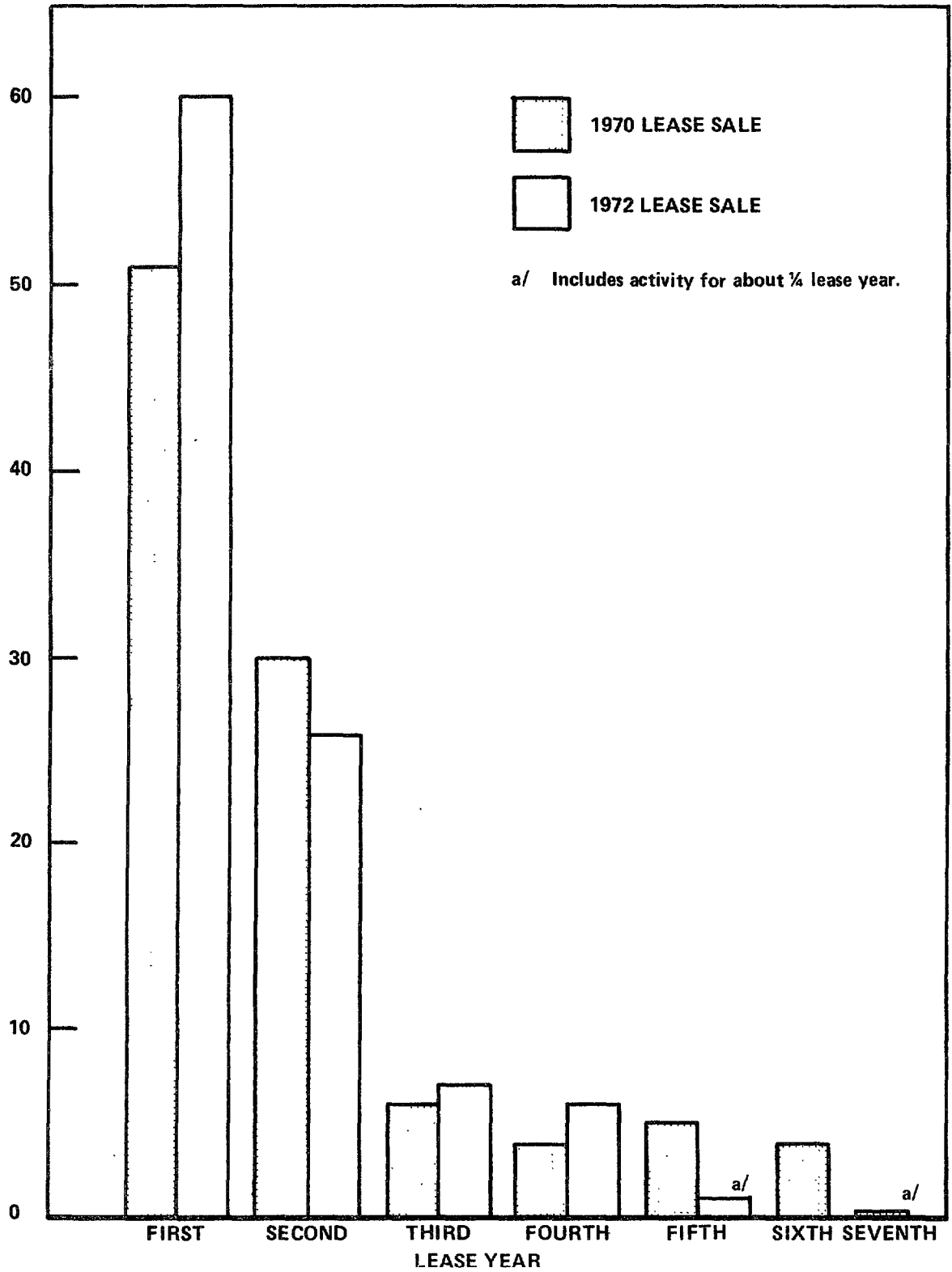
To provide an overall perspective, the graphs on pages 18 and 19 show by lease year the percentage of exploration and development wells drilled on all leases by March 1977. The majority of the exploratory wells were drilled during the first 2 years, including those on relinquished leases. (See graph on p. 18.)

We found that by the end of the third lease year:

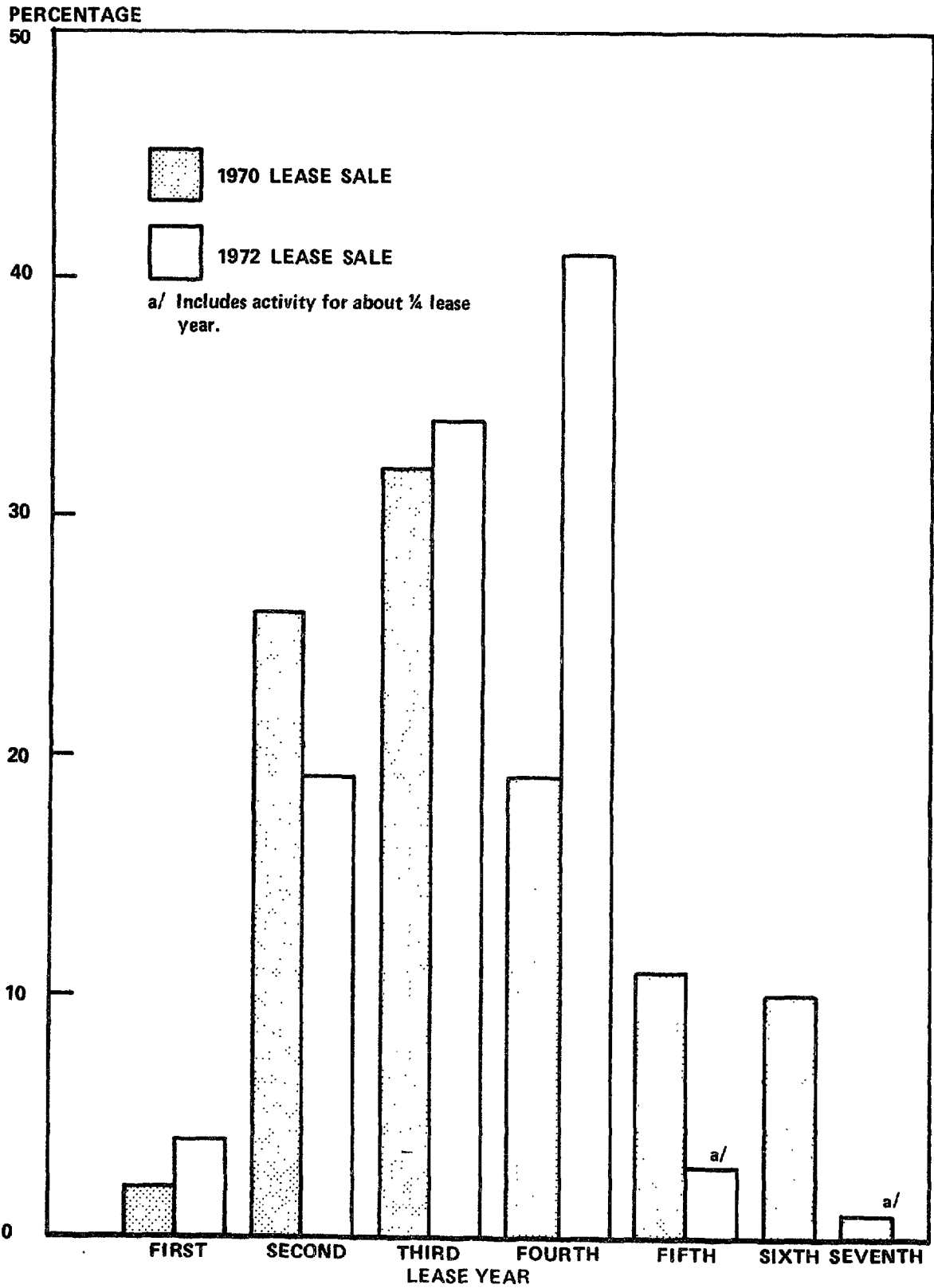
--Most of the leases on which sufficient oil and gas were found were well on the way to production. That is, 43 of the 47 initial production platforms and the

PERCENTAGE OF EXPLORATORY WELLS DRILLED IN EACH YEAR AFTER
THE LEASE AWARD AS OF MARCH 1977

PERCENTAGE



PERCENTAGE OF DEVELOPMENT WELLS DRILLED IN EACH YEAR AFTER
THE LEASE AWARD AS OF MARCH 1977



2 initial individual production wells installed on the producing leases were installed by the end of the third lease year.

--Most of the leases where sufficient oil and gas were not found had been identified as unproductive and would be relinquished by the end of the primary term. That is, 104 of the 121 wells drilled on these leases were drilled during the first 3 lease years.

LEASES WITH EXPLORATION OR DEVELOPMENT PROBLEMS

USGS occasionally queried lessees on why they had not been more active on the leases. However, USGS did not use these responses as a basis for taking regulatory or other actions to assure prompt resolution of the problems.

December 1970 leases--On April 4, 1977, there were 62 leases classified by USGS as producible shut-in leases past their primary term, including 28 leased in December 1970. The activity performed on those 28 leases is described below.

--Seven leases were undrilled for 3 and 4 years.

1. Five of them had a well qualified within the first 2 years of the primary term, but no additional exploratory wells were drilled the next 4 years. Additional exploratory wells were drilled after the primary term to determine if the leases would be developed. One lease was relinquished in May 1977. The remaining leases will most likely be developed.

2. The two other leases were undrilled for 3 years before a qualifying well was drilled.

--Two leases had oil and gas discovered on them in the first year of the primary term. There was no further activity until a production platform was installed about 5 years later. The lessee had delayed setting the platform to develop those two leases because the lessee hoped to find better use for that platform on a prospect with greater potential.

--Three leases may have had development delayed because the geologic structures extended into adjoining tracts which had not been offered for lease. The lessees obtained the adjoining tracts when they were offered in subsequent sales held in 1972, 1973, and 1974.

Development drilling had commenced on two leases.
A platform had been ordered for the other lease.

--Two 1970 adjacent leases which were over a common geologic structure were obtained by a single lessee. The lessee drilled six exploratory wells on the common structure in the primary term. A platform was installed shortly after the primary term, and the lessee began drilling development wells.

--Two leases were developed and were ready to produce in July 1975, but extension of a pipeline into their area had been delayed by a FERC proceeding involving the pipeline company and other producers which began in May 1974. FERC must grant permits before producers and pipelines can sell or transport gas from the OCS. FERC issued Opinion No. 789 on March 7, 1977, but the pipeline company objected, and a rehearing was scheduled. On March 20, 1978, and again on June 21, FERC denied rehearing in Opinion Nos. 10 and 10-A, respectively. The producers and pipeline companies asked the Commission, during January 1979, to delay the implementation of the Opinions. The Commission has not yet taken action.

--Two shut-in 1970 leases had oil and gas discovered on them, but no further development commenced because special pricing relief had not been approved by FERC. FERC may grant special pricing relief (higher than the national rate set by FERC) if the lessee can demonstrate the higher price is required to provide economic justification to develop the lease. The leases were owned by the same lessee. The lessee had filed a single application for both leases in September 1976. Amended applications were filed in June and September 1977. The latest exploration activity was performed in 1973 on one lease and in 1976 on the other.

--Four leases were explored during the primary term, but sufficient oil and gas to warrant commercial development were not discovered until after the primary terms had ended. The lessees plan to develop those leases.

--Six leases had sufficient gas found during the primary term, but development had not been completed.

The lessees had installed platforms on five leases prior to the end of the primary term and a platform was installed on a sixth lease shortly after the primary term had ended. These platforms have provision for 8 to 21 development wells each. For safety reasons, all development wells on a platform are usually drilled before any production begins. Development drilling has commenced on all six leases.

December 1972 leases--There were 84 leases on the Gulf OCS classified as producible shut-in in the primary term in February 1977, including 19 leases sold in December 1972. Like the December 1970 leases, these 19 leases were in varying stages of development. Twelve of these 19 leases are beginning to experience development lags similar to some of those experienced by the December 1970 producible shut-in leases.

Two of the 12 leases were developed and ready to produce by the middle of the third lease year. In July 1975, the lessee applied to FERC for a certificate to sell the gas, but approval was not granted until December 1976--18 months later. The remaining 10 leases had qualifying wells drilled early in the lease term with no additional development for two or more consecutive years.

USGS program to identify undrilled leases--USGS has established a program to identify undrilled primary-term leases which are older than 2 years. In 1975, when USGS surveyed the lease operators concerning their justification for the lack of activity, the responses varied but the most typical was that results of drilling on adjoining leases discouraged further exploration. Others stated that (1) seismic data was being reevaluated, (2) the geologic structure had complex faulting, (3) new seismic data was needed, or (4) seismic and geologic data did not produce evidence to warrant drilling. One operator refused to respond to the request because the leases were still in the primary term.

As of April 1977, USGS had again surveyed all lease operators and identified 218 leases with no drilling for the last 2 years. These included 19 (or 16 percent) of the leases sold in the December 1972 sale. The following are the reasons given to USGS by the lessees when asked why these 19 leases were not drilled.

- Two lessees advised USGS that all available exploratory drilling money was being spent on more favorable acreage.
- Four leases were not drilled because of discouraging results of drilling on adjoining tracts.
- One lessee owned seven of the leases undrilled in the 1972 lease sale; the lessee provided no specific plans on five of the leases. The lessee told USGS that the two remaining leases were still in the primary term and that it would advise USGS when necessary and appropriate under the lease terms and regulations.
- Four lessees did not respond to the survey.

The program to identify undrilled leases over 2 years old was not used as a diligence tool but only for informational purposes. No lessee was ever ordered to drill an exploratory well.

USGS is continuing to compile statistics on lessees' operations during the primary term. USGS officials believe that the information may be useful to DOE in developing diligence requirements. However, based on our lease sale analysis, the problem of diligence in lessees' operations during the primary term has already been established and it is well understood. There is now a need to establish diligence requirements which will deal with the problem.

CONCLUSION

Because there are no standards by which to gauge whether lessees are exploring and developing their leases in a timely manner, the matter of diligence cannot be conclusively determined. However, based on the information examined, we believe that an effective regulatory program during the primary term would have assured earlier identification and resolution of problems. Consequently, those leases which eventually began production would have begun significantly sooner.

The end of the third lease year appears to be an appropriate and opportune time for USGS to take a close look at the exploration and development activities of

lessees in the Gulf of Mexico OCS. Those leases not nearing production or not relinquished should be examined and actions taken to assure that lessees take effective and expeditious action to resolve the problems causing delays in exploration and development.

REQUIREMENTS OF STATE
AND FOREIGN GOVERNMENTS

In examining how the U.S. Government could regulate diligence by lessees on Federal lands, we interviewed officials of the States of Louisiana and Texas and the Governments of the United Kingdom and Norway concerning their exploration and development license requirements. Texas and Louisiana regulate the State lands portion of the Gulf of Mexico OCS. Norway and the United Kingdom are interested in developing their sections of the North Sea to reduce their dependence on imported oil and natural gas.

We found that all four governments have more stringent requirements than the U.S. Government which (1) encourage lessees to exercise diligence in their exploration, development, and production activities and, (2) provide penalties for failure to do so. The U.S. Government does not have similar requirements. These penalties are briefly described below.

- Texas doubles the rent for shut-in leases extended beyond the 5-year primary term.
- Louisiana has a committee which evaluates diligence in developing the leases by reviewing at least once every 6 months the lease operations and the lessee's plans for exploration and development. If the committee believes that the lessee has not exercised diligence, the lessee is requested to appear before the committee with proposed plans of development. If there are no plans, the lessee is asked to relinquish the lease.
- Norway will not grant a license until a work program for the 6-year primary period has been approved. If the work program is not fulfilled or if the license

is relinquished, the Government may demand a payment equivalent to the cost of any unfulfilled work. If the license is extended beyond the primary term, the licensee must submit a yearly work program and budget.

--The United Kingdom requires a 4-year work program similar to that of Norway, but there is no financial penalty for not fulfilling it at the end of the primary term. The license may be renewed at the end of the 4 years, but the lessee must relinquish 1/3 of the area to the Government then and another 1/3 after 3 years. The lessee has the right to select the area to be retained.

Although these requirements may not be directly applicable to the Federal regulation of the Gulf of Mexico OCS, they do indicate ways of strengthening the regulatory activities of the U.S. Government, considering other information presented in this report.

Specifically, the Government could require lessees with tracts in the Gulf of Mexico OCS, who have not submitted a development plan by the end of the third lease year, to provide USGS

--a statement of the problems the lessee is experiencing in developing the lease,

--a statement of the actions the lessee is taking or is planning to take to resolve the problems, and

--a schedule for completing these actions.

USGS could, in an expeditious manner, review the statement and, if necessary, suggest revisions to make the statement acceptable. The development plan could be reviewed in a similar manner.

If lessees fail to submit either a development plan or a statement by the end of the third lease year, or fail to meet the schedule for completing actions to resolve the problems, USGS could impose currently authorized sanctions and seek congressional approval to take other punitive measures such as those applied by State regulatory bodies and other countries.

It should be noted that these are possible regulations to encourage speed in exploration and development activities and to begin and continue production. They do not, however, provide policy guidance for diligence, especially in the level of production to be obtained.

AGENCY COMMENTS AND OUR EVALUATION

DOE, in its comments (see app. I), said

"The data and analysis contained in the draft report are simply too limited to reach a conclusion on this matter. Regulations developed by DOE will be based upon a comprehensive analysis of all factors involved in achieving timely resource development for all areas of the OCS."

DOE, in its comments on our draft report (see app. I), also noted that our conclusions were based on our analysis of activities on leases from two OCS lease sales. It stated that a greater number of leases from more sales (preferably all sales) should be evaluated to provide a more typical pattern of timing of exploration, development, and production. We disagree. Our sample included all leases whose exploration and development activities were conducted under the supply and demand circumstances following the Arab oil embargo of 1973 and which had sufficient activity to fully evaluate. Leases sold earlier were explored and developed under different supply and demand circumstances, and leases sold later had not had sufficient activity to fully evaluate. Also:

- A strong leasing program already exists in the Gulf of Mexico that has supplied the Government with detailed and comprehensive information that can be used now to develop diligence requirements for the Gulf of Mexico. When other OCS areas are more developed and the Government has sufficient information, diligence requirements and regulations can be developed separately for each of these areas or existing requirements and regulations can be adapted.
- The United Kingdom and Norway have domestic circumstances similar to that of the United States in that they experienced shortages because of the Arab oil embargo. Their importation of oil and natural gas increased. However, they developed diligence

requirements for lessees' operations during the primary term in the harsh North Sea while they were evaluating ways to become more independent of foreign sources of energy.

The Government should evaluate these requirements of other States and foreign governments and start to adapt them for its own use.

Interior, in its comments (see app. II), said:

"Requiring a Plan of Operation by the third year of a lease where there has been no previous activity is feasible and is being considered by DOI. We will also consider appropriate enforcement measures. We are aware that some of the leases with little potential receive no attention until the fourth or fifth year. A few leases are terminated with no more than seismic recordings as a record of the action."

Further, an Interior official stated that the Department is developing an enforcement regulation to require that an exploration plan be submitted by the end of the second year for leases to be issued in the future. For a lease issued before 1977, a development plan will be required by the next anniversary date of the lease. Interior plans to publish this regulation about the beginning of June 1979. Although DOE is responsible for diligence requirements and regulations, Interior is taking a step in the right direction by monitoring lessees' operations by closer enforcement of existing regulations.

LEASE EXTENSION REVIEW
COMMITTEE HAS NOT DEVELOPED
FORMAL DILIGENCE CRITERIA

The Secretary of the Interior established a Lease Extension Review Committee to assist him in making decisions on applications for suspensions of production beyond the primary lease term. Although the Secretary had decreased the time granted for lease extensions by placing more stringent time requirements on lessees, he has not addressed criteria for diligence requirements during the primary term, and is now performing staff functions substantially the same as those previously performed at the field level. The Committee's work represents another attempt to regulate lessees' operations on leases without the benefit of diligence requirements, during the primary term.

The Secretary of the Interior began reviewing the procedures for approving suspensions of production or operations beyond the 5 year primary term in February 1977. (See p. 4 for a description of suspensions.) Applicants for suspensions were required to submit a detailed history of activity on the lease and a schedule outlining planned development much the same as was done in the past. Information on the planned development, however, was to be more detailed. The Secretary has been granting suspensions for shorter periods better suited to the planned work rather than the usual one year period granted in the past. For example, if a lessee requests time needed to commence drilling, a suspension is approved only for the time needed to commence drilling operations. As of April 4, 1977, there were 62 producible shut-in leases extended beyond the primary term. Of these, 59 were held by suspensions, and 3 were held by drilling operations. Since the new policy was implemented, leases held by drilling operations increased to 14, while only 11 suspensions were granted by the Secretary.

Since no producible shut-in leases ended their primary term between February and August 14, 1977, the Secretary had not received requests for initial suspensions. However, the Secretary stated that he expects requests for suspensions to diminish because of his more stringent requirements and that requests would be sparingly granted.

The chairman of the Committee said that, based on the approval of suspension requests, informal standards had been developed to use in gauging the reasonableness of the lessees' requests. For example, a standard had been developed for the length of time needed to contract for a drilling rig, the length of time to install a platform, etc., and the Committee uses them to assess lessees' requests. Deviations from these standards are examined, and the burden of proof rests on the lessee to justify why more time is needed. No plans have been made to formalize these standards for use by field personnel for guidance in recommending suspension approval for lessees. DOE officials who are monitoring the committee's activities said no criteria have surfaced yet to gauge lessees' diligent development.

Since April 1977, personnel from the Metairie regional office that had in the past approved suspensions are being trained, by serving 30-day periods as members of the Committee, to draft recommendations to the Secretary for approval

of suspensions. The Committee chairman is presently considering similar training for personnel from the USGS field office in Menlo Park, California.

Although the Lease Extension Review Committee has served to decrease the amount of time granted for lease extensions by placing more stringent time requirements on lessees, it has not addressed criteria for diligence during the primary term, and is now performing staff functions that are substantially the same as those previously performed at the field level. Moreover, DOE now has responsibility for establishing procedures for the Secretary of the Interior to use in granting and ordering suspensions of production.

AGENCY COMMENTS AND OUR EVALUATION

Interior, in its comments (see app. II), said:

"The Department has established two criteria for the approval of [suspension] requests:

1. The request must present a timetable of exploration and/or development activities leading to the commencement of production and
2. The amount of time granted to perform the activities must be reasonable.

Failing this, the [suspension] will not be granted. In addition...criteria have been established and new measures are being taken to assure diligent development of units." 1/

With respect to units, Interior's new position is that drilling on a single lease will not necessarily preserve other leases in a unit: that is, to permit the lessees to retain all the leases beyond the primary term because of drilling on one lease in the unit (see pp. 3 and 4 of this report). The Secretary requires concurrent development of all potential oil and natural gas accumulations on leases committed to the unit. More importantly, criteria for units as presently proposed do not address development during

1/Units are adjacent leases which are allowed to be operated as a single lease because they cover a single reservoir.

the primary term or the level at which the natural gas should be extracted.

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This is a step forward from the previous practice of allowing lessees to use unitization as a means to hold leases beyond the primary term without production or drilling activity. However, it allows the barest minimum of drilling activity--one well through each reservoir potentially bearing oil and natural gas--to hold the leases. Also, it does not provide criteria for exploration and development of leases not included in units. USGS reports that during 1977, 17 percent of natural gas production from all OCS areas was from units, and that cumulative production from 1956 through 1977 was 24 percent.

CHAPTER 4

PROBLEMS IN REGULATING PRODUCTION

ACTIVITIES BEYOND THE PRIMARY TERM

In response to the natural gas shortages of the 1976-77 winter, the Government took actions directed toward accelerating exploration and development of leases and increasing production. Unfortunately, in the absence of effective policy or regulations governing the speed of exploration and development of leases during the primary term or the level of production of the natural gas reserves discovered, the Government's actions were misdirected toward leases and fields beyond the 5-year primary term which were already producing. These actions were expensive and virtually fruitless.

In examining developed leases in the Gulf of Mexico OCS for opportunities to increase production, the lack of criteria or effective regulations regarding the level of production prevented Interior from issuing orders to increase production. Interior could not gauge whether the lessee had been diligent with respect to the level of production that could be achieved with the facilities installed. One lease had been studied four times without conclusive results.

USGS has begun a program to make an additional 36 such studies initially and plans to continue the program indefinitely. But the program is premature, needlessly expensive, and of doubtful success. Other programs attempting to regulate production from developed fields and leases by setting production rates also have been ineffective. Interior has not been able to define the Maximum Efficient Rate. A similar concept for regulation, Maximum Attainable Rate of production, was contained in the OCS Lands Act Amendments of 1978. Both concepts are limited in that the rates would be established after the decisions have been made during lease development, which limits the level of production with the facilities that have been installed.

Because Interior failed to provide criteria for diligent production from Federal lands, FERC attempted to close the regulatory gap by initiating its own actions to ensure diligent production. A Federal Court of Appeals ruled that FERC

did not have jurisdiction over the production and gathering of natural gas. FERC's appeal to the Supreme Court was unsuccessful. We believe these problems would have been avoided if regulations had been issued to govern the level of production on Federal lands.

STUDIES OF DEVELOPED AND PRODUCING LEASES
HAVE BEEN EXPENSIVE, DUPLICATIVE,
AND INCONCLUSIVE

A number of studies have been made of the possibilities for increasing natural gas production from developed and producing leases on the Gulf of Mexico OCS, but they have all been inconclusive because there are no established criteria for determining the acceptable level of production on the Federal domain. These studies also have been expensive and duplicative. Interior has prematurely initiated a needlessly expensive program to conduct an indefinite number of these studies which has little chance of achieving its purpose of increasing production.

In January 1977, the Secretary of the Interior ordered a preliminary investigation of five fields on the Gulf of Mexico OCS to compare production capabilities with production levels and to determine whether a more thorough examination was merited. During the first part of February 1977, a consulting firm conducted the preliminary investigation. The report, released on February 17, examined monthly production figures during 1975 and 1976 compared with maximum efficient rates and maximum production rates established under Gulf of Mexico OCS Order 11 for four fields and the extent of nonproducing reservoirs and reserves in five fields. The report concluded that the Secretary should conduct a more comprehensive investigation of most major fields covered by Federal leases in the Gulf of Mexico.

The Secretary, on February 25, 1977, invited suggestions from Members of Congress, the natural gas industry, and environmental groups as to procedures for conducting the comprehensive review of natural gas production in the Gulf of Mexico and the persons to conduct it. Three options were considered as to who should conduct the comprehensive review: (1) USGS, (2) outside consultants, or (3) a blue-ribbon panel. The Secretary chose the third option and asked a committee of the National Academy of Sciences (NAS) to establish a blue-ribbon panel to do the work. NAS used consultants and subcontractors to assist the panel.

The objectives of the study were to (1) identify opportunities and possible actions for increasing gas production from the leases studied; (2) assess the economic, contractual, and other factors affecting such opportunities and possible actions; and (3) estimate the consequences associated with actions that may be taken by the Secretary to increase production and the amounts of gas that might thereby be produced. The Secretary added that the study of Gulf of Mexico OCS production would also be designed to develop adequate data to enable Interior to exercise its right under most existing OCS leases to require the drilling and production of additional wells so that "the lease area or any part thereof may be properly and timely developed and produced in accordance with good operating practice." Such right has never been exercised in the past.

The study was conducted in two phases. In the first phase, six fields were selected for study. The six fields chosen were Tiger Shoal, East Cameron 64, Eugene Island 266, Vermillion Bay 14, South Marsh Island 48, and East Cameron 271. The six fields were assessed for their physical availability of gas for increased production and, where appropriate, possible actions to increase production were identified. In addition, the economic, contractual, and other factors affecting such production were identified. In the second phase, the results of the detailed analyses of the first phase would be assessed to determine what general observations could be drawn and what recommendations could be made to the Secretary of the Interior for actions to increase gas production. The actions contemplated included whether additional fields should be studied for their ability to produce more gas in the near term. The total cost of the study was \$578,000 and was completed on April 28, 1978.

The first field examined by the NAS committee was Tiger Shoal, leased by Texaco, Inc. The committee found that gas production could be increased simply by higher production rates. The committee said that, without adding to existing facilities or drilling additional wells, gas production could be increased by about 129 MMcf/day (million cubic feet per day) by higher rates in six reservoirs. Texaco advised us that the possible increase in production was already available under a sales contract and the customer had not asked that the production be increased.

The committee also concluded that production could be increased even more with additional investment in wells and production facilities. The most extreme case in the report involved at least 36 additional wells and 13 recompletions. Under all cases, however, the amount of natural gas would be produced faster and the life of the field would be shortened considerably.

NAS' committee report on the field was delivered to Interior in October 1977. The study did not recommend specific actions to increase production and gave no recommendations on the choice between producing the limited reserves of gas quickly or saving them for future use. In its summary of phase one, submitted on March 6, 1978, NAS concluded that only one of the six fields it studied--Tiger Shoal--offered a significant opportunity for increasing production in the near future.

While the Secretary was considering means to determine whether production could be increased on the Gulf of Mexico OCS, during February 1977, USGS launched its own detailed study of Tiger Shoal. The USGS study objectives were nearly identical to those of the NAS committee. In fact, Tiger Shoal has been studied by the Congress and other Federal agencies as far back as 1974 with the emphasis on increasing production. The latest Tiger Shoal study by USGS is estimated to have cost about \$90,000.

USGS, in its report, found that production could be increased, in the extreme case, with some 19 new wells (38 completions) and 5 recompletions (or workovers).

The NAS study and the USGS study were used as a basis by the Secretary to order Texaco to submit a development plan, by December 1, 1977, to increase production from Tiger Shoal. Aside from reference to the two reports' discussions of opportunities for increased production, the Secretary of the Interior did not indicate to Texaco which wells or reservoirs were desired candidates for increased production or what criteria he would use to evaluate the adequacy of Texaco's plan. In fact, one official at Interior told us that to determine whether Texaco had been a prudent operator, Interior would have to find a similar field and ascertain what that operator did or would do under similar circumstances of available options and prices. Consequently, the Secretary was only able to order a development plan from Texaco.

Texaco's development plan for Tiger Shoal, submitted on November 28, 1977, outlined the following steps Texaco was taking or planned to take to increase production by the 1978-79 winter season:

- Negotiations were underway with a pipeline company to contract additional gas reserves to the interstate market.
- During 1978, six recompletions (bringing "behind the pipe" reservoirs into production) and four new wells were planned, with an estimated 114 MMcf/day additional gas predicted.
- An additional compressor was planned that is expected to increase deliverability 33 MMcf/day.

An Interior official said a working conference was held with Texaco officials on February 21, 1978, because the Texaco plan did not cover (1) depletion of the field, (2) disposition of the 15 percent of the gas reserves which were not dedicated to the interstate market, and (3) drilling an exploratory well to 16,000 feet as requested by the Secretary.

Texaco, on March 28, 1978, provided the Secretary of the Interior several tentative plans for further development of Tiger Shoal, but asked the Secretary to provide parameters for acceptable production capability so that Texaco could devise an acceptable plan.

The Assistant Secretary for Energy and Minerals, in a letter to Texaco dated May 17, 1978, said:

"Because it is difficult for us to perceive what the general nature of final forecasts would be under the alternatives, we are requesting Texaco to provide forecasts for all three assumptions : : : After we have reviewed the production forecasts, I believe that Texaco and Interior should agree to adopt one as a "target" for future deliverability production of the Tiger Shoal Field."

Texaco's letter to the Assistant Secretary for Energy and Minerals, dated July 25, 1978, said Texaco

could not foresee what respective gas purchasers would need nor could they be forced to accept gas they did not want. The production forecasts, Texaco said, do not represent its prediction of production rates for future years from Tiger Shoal. Texaco said the forecasts were prepared to provide examples of depletion scenarios of the field.

The Secretary of the Interior has not yet made a decision on what Texaco will be asked to do to further develop Tiger Shoal. With no criteria or effective regulations with respect to diligence in production, Interior has no standards with which to measure whether Texaco has been a diligent operator. Therefore, Interior is without a reasonable basis for ordering additional production.

LOE, with no policy or regulations in effect, only provided comments to the Secretary of the Interior on the difficulties of amending the sales contracts to change the amounts of gas to be delivered or the term over which it was to be delivered.

THE USGS PROGRAM TO STUDY
DEVELOPED FIELDS IS PREMATURE,
EXPENSIVE, AND OF DOUBTFUL SUCCESS

Notwithstanding the previous inconclusive studies discussed above, USGS has begun a permanent program to conduct studies of the possibilities for increasing production from leases which are already developed and producing. This program is premature, needlessly expensive, and of doubtful success in achieving the purpose of increasing production. To make matters worse, the program is to be continued indefinitely.

The proper time for examining the adequacy of development of a lease, and the level of production that is provided for, is when the lessee requests USGS' approval of the development plan. The plan should be examined using established criteria for determining the acceptable level of production. Presently none exists.

USGS was authorized 103 personnel positions and a budget of about \$3.6 million for fiscal year 1978 to begin this program to initially study 36 large gas fields on the Gulf of Mexico OCS similar to the studies made of Tiger Shoal. During fiscal year 1978 USGS studied six fields

at an estimated cost of \$3.6 million. Thus far Interior has not done anything with the results of these studies. In addition, by fiscal year 1980, USGS plans to study 18 fields per year at a cost of \$3.6 million per year.

The program is premature in two aspects. First, there is no policy which would provide criteria for judging whether the fields are adequately developed. Interior and USGS officials said that lessees, whose fields showed opportunities for increased production, would be contacted to ask what they could do to increase production in those fields. Thus far no lessee has been contacted, based on the six fields recently completed during fiscal year 1978. Second, the decision to begin the program was made before receiving the second phase report from the NAS committee. The second phase report was to advise the Secretary of the Interior on whether to study additional fields. This report advised against such a study.

The program is unnecessarily expensive when compared to the cost of NAS' subcontractor study. The NAS subcontractor studied six fields at a cost of \$359,358, an average cost of \$59,893 per field. The USGS program would study 36 fields at an initial average cost of \$911,250 for the first four fields, down to an average cost of \$202,666 for fields studied in fiscal year 1980. This latter cost is over 3 times the average cost per field of the NAS subcontractor study.

The program is of doubtful success, even ignoring the lack of criteria for judging the fields to be studied. The NAS studied the six fields it judged to have the greatest likelihood of having opportunities for significant increases in production. The first phase of the NAS study also concluded that if the six fields studied were typical of existing fields in the Gulf of Mexico OCS, the Nation would have to look elsewhere to alleviate near-term shortages of natural gas.

We believe this program should be held in abeyance until fully justified. In our companion report issued concurrently entitled "Natural Gas Reserves Estimates: A Good Federal Program Emerging, But Problems and Duplications Persist" (EMD-78-68), we note that the Energy Information Administration (EIA) has a need for Federal personnel with the capability of evaluating reserves of natural gas and

crude oil to initiate a program to validate the estimates of reserves reported by operators to EIA. We believe that any personnel already appointed to the positions in the USGS program should be used to support the EIA data validation program until a determination can be made as to whether the USGS program should be continued.

AGENCY COMMENTS AND OUR EVALUATION

Interior, in its comments (see app. II), strongly opposed our conclusion that the field studies be held in abeyance until fully justified. Interior presented the following as reasons to continue field studies:

- Such studies are basic to any diligence effort directed at increased production. The field studies are a continuing effort to determine if acceleration of production is possible and if new reserves can be added. No policy can proceed and the ultimate diligence decisions cannot be made without the time and expense of field studies. The factors necessary to a field study are varied and numerous. Each field is unique in its characteristics and must be considered on its own merits. The data which contribute to field performance must be gathered, studied, and placed in perspective in order to make diligence decisions. Terminating the field studies would effectively terminate this major aspect of the diligence program.
- Such studies are necessary to determine if acceleration of the production is feasible and economical, and if increased recovery is possible through a workover or new well or through an injection project (for oil). Without such studies, decisions concerning diligence can hardly be more than arbitrary, and
- Field studies are essential to any diligence determination. Any decision made in today's circumstances must be in line with the Nation's precarious supply-demand situation which in itself dictates policy. Thus, Interior intends to continue its field studies and other related programs as an essential element of the diligence program.

DOE, in its comments (see app. 1), supported Interior, saying:

"* * * the data collected in this program could be useful to DOE in developing diligence criteria and regulations."

Since 1970 Interior has spent millions of dollars studying developed fields to determine whether increased production is feasible. As noted earlier, Texaco's Tiger Shoal field alone has been studied on several occasions.

These studies have not provided Interior a basis for ordering increased production or development. Over the past 8 years Interior has never ordered a well to be drilled on a developed lease or field when it felt the owner or operator was not diligent because no diligent production criteria exist. For example, Interior has not ordered Texaco to drill a well in the Tiger Shoal field since the NAS study was delivered to Interior in October 1977. The Secretary of the Interior only ordered Texaco to submit a development plan.

Interior, having accumulated the information gathered in the studies over the past 8 years, established a formal program to study developed fields with emphasis on increased production, and plans to continue this program indefinitely. Interior claims that the studies will provide data needed for development and testing of new approaches to regulation. Unless and until diligent production criteria are established, the studies will not provide a basis with which to determine whether a lessee has been diligent.

This brings up the last question. To what extent does USGS need to make its own independent studies? Interior addressed this question in its comments on our draft report.

The Department stated that:

"GAO implies that the reserve survey and verification proposed by EIA will provide information needed by the Survey to conduct its other functions, especially diligence. This is clearly not the case, and indicates a major misunderstanding of the type data needed for both diligent enforcement and a reserves inventory."

As we pointed out in our companion report entitled, "Natural Gas Reserves Estimates: A Good Federal Program Emerging, But Problems and Duplication Persist" (EMD-78-68), in many instances USGS can use the reserves estimates prepared by the lessees. USGS may believe it needs to prepare some reserves estimates itself (on a limited ad hoc basis) to verify data available from the lessees. We believe the lessees can be required to provide to USGS, with appropriate certifications, the studies they make to determine compliance with the regulations to be established. As in the case of the reserves estimates, USGS may wish (on a limited ad hoc basis) to conduct independent studies or analyses to verify the data received from the lessees. However, the basic problem with this program is that USGS plans to continue it indefinitely. This is necessarily based on the assumption that there will continue to be additions to the inventory of developed and producing leases which have not been examined by USGS with respect to the adequacy of the level of development.

We believe the most appropriate time to examine the level of development of a lease is when the lessee submits the proposed development plan to USGS for approval. It should be examined in the light of established criteria for determining the acceptable level of production. This would result in the appropriate level of development and production being achieved at the earliest date. It also would avoid losing opportunities to achieve the most appropriate level of development by making the determination after (1) initial development has occurred, and (2) the cost of adding the capacity has increased, thus becoming partly or completely uneconomical.

The examination of proposed development plans, using the basis discussed above, should serve to avoid any need for a perpetual program to examine producing leases with respect to whether they have been developed to the appropriate level.

Pending the establishment of policies and implementing regulations, there is no need to continue the USGS program. As pointed out in our companion report, the personnel assigned to this program can be used to assist EIA in its validation efforts.

ESTABLISHMENT OF PRODUCTION RATES
FOR DEVELOPED LEASES WILL NOT
ENSURE DILIGENT PRODUCTION

Interior has tried unsuccessfully to establish rates of production for developed leases to be used as a measure of diligent production. These production rates would be ineffective because they would be established after development decisions are made and implemented which limit the level of production. The Government should direct its attention to establishing criteria for determining an acceptable level of production and to applying those criteria when examining lessees' proposed development plans.

Interior has been unable to use production
rates as a diligence tool

Production rates were originally established by USGS as a means to ensure conservation of natural gas, but the concept was eventually considered as a means to maintain a higher level of production. The change in concept has not been successfully implemented.

Maximum Efficient Rate of production is a concept used in OCS Order 11 to prevent waste of resources by overly fast production of a reservoir and refers to the maximum sustainable daily oil or gas withdrawal rate from a reservoir which will permit economic development and depletion of that reservoir without reducing ultimate recovery. Under OCS Order 11, dated May 1, 1974, MER is a regulatory device which established a maximum rate not to be exceeded. A term closely associated with MER is the Maximum Production Rate (MPR) which, for a gas well, is the maximum daily rate at which gas may be produced from a well. Faster production can damage the well. Under OCS Order 11, USGS sets MER and MPR for each producing OCS reservoir and well based on recommendations by the lessees.

On December 22, 1975, the Energy Policy and Conservation Act (EPCA)(42 U.S.C. 6201) was signed. Section 106 of the act used a similar definition for MER, but intended it to be used as a minimum rate at which lessees might be required to produce a field. (OCS Order 11 requires that an MER be established for a reservoir, not a field.) Interior was required by the act to issue regulations establishing MERs for oil and gas fields on Federal lands.

Interior asked the Resources For The Future, Inc. (RFF), an independent nonprofit research organization, to conduct a technical review of the MER concept, past and present practices in its use, and its suitability for establishing minimum production levels. RFF submitted its final report in January 1976 and one of its concerns was the discrepancy in approaches between Order 11 (which uses it as a maximum rate) and Section 106 (which uses it as a minimum rate). RFF concluded that MERs cannot be used as a measure of diligent production and recommended elimination of the MER system altogether.

Despite the RFF criticism, Interior, in January 1977, began to develop a MER definition which would, in turn, allow Interior to set MERs for leases on Federal lands. Three public hearings were held in the latter part of March 1977 to obtain a better working definition of MER. No agreement was reached on a definition and no field MERs were set as of October 1, 1977, when DOE was created and officially assumed this responsibility.

Interior and USGS officials said that there are difficulties with the MER approach to regulating diligent production, for various reasons, including:

- MER cannot serve both as a maximum rate (OCS Order 11) and a minimum rate Energy Policy and Conservation Act in practice.
- MER emphasizes the production stage of a lease, although many important decisions are made during development which limit the MER. These include the size and number of platforms, wells, and pipelines to be set, and what volume of gas will be left behind-the-pipe for how long.
- MER stresses only technical factors, but significant economic and policy factors should also be considered in setting diligence for production. These include determining a level of investment that allows a reasonable rate of return to the owner and determining a rate of production that provides a sustained amount of gas over a long term contract period.

On August 23, 1977, the Director, Office of Minerals Policy Development, Department of the Interior, advised us that a paper with a proposed definition had been developed. However, the DOE Organization Act gave DOE the responsibility to set MER rates, and DOE was established on October 1, 1977, before the definition was finalized.

DOE's Director of Leasing Policy Development stated that the proposed MER definition in the DOE paper had been rejected by DOE because it was applicable only on the Gulf of Mexico OCS. This was because different geologic structures are in other OCS areas.

DOE officials had considered contracting with an engineering firm to define MER, but decided instead to establish an interagency task force to develop guidance for MER determination. An official advised us that the task force would first establish an MER for coal because Interior must soon finalize an environmental impact statement for coal production which would include MER guidance. The task force has not been established nor have target dates been set for establishing the MER for the various energy sources.

Agency comments and our evaluation

Interior, in its comments (see app. II), said

"* * * establishing production rates under the terms of the Energy Policy and Conservation Act, was transferred to the Department of Energy. This requirement received detailed evaluation in this Department prior to transfer. We are concerned about the potential benefits of this program in relation to the substantial costs of implementation."

We share Interior's doubts that this program is worth continuing.

MAR concept should be abandoned

The OCS Lands Act Amendments of 1978 supplements MER with a Maximum Attainable Rate (MAR) of production (section 606(d)(1)(A), (B)) which may be produced under actual operating conditions without loss of ultimate recovery of natural gas. MARs, however, would be determined for significant fields on the OCS only.

MAR is planned to be used to provide the Congress and the Government

- knowledge of the status of OCS oil and natural gas reserves, resources, productive capacity, and production available to meet current and future energy supply emergencies;
- knowledge of the potential quantities of oil and natural gas resources which could be made available to meet such emergencies; and
- assistance in establishing energy pricing and conservation policies.

Problems similar to those experienced with MER will probably persist in a program to use MAR as a means of enforcing diligent production on lessees, because they share the same deficiency--they are to be set after the lessees have determined the production levels and have installed facilities to produce those production levels. Many important decisions are made during development which limit the MAR. These include the size and number of platforms, wells, and pipelines to be set, and what volume of gas will be left behind-the-pipe for how long.

Also, in our companion report, "Natural Gas Reserves Estimates: A Good Federal Program Emerging, but Problems and Duplications Persist," we discuss a DOE program being developed to obtain estimates of oil and natural gas reserves. That program also will provide USGS information useful in continuing its program of estimating our resources (the undiscovered deposits of oil and natural gas). We believe that these programs, coupled with recommendations in this report (if implemented), would accomplish the major intent of the MAR legislation.

FERC TRIED TO EXPAND AUTHORITY TO COVER DILIGENT PRODUCTION

When Interior failed to establish a policy for natural gas from Federal lands and regulations and to effectively regulate the level of production on the Gulf of Mexico OCS, FERC attempted to fill the regulatory gap. While FERC's motivation may be laudable, its actions were to be rejected in the courts and the expenses incurred by the Government and the industry in FERC's attempt to establish a regulatory program were wasted.

Because Interior lacked criteria for diligent production from Federal lands, FERC initiated its own actions to ensure diligent production. In its Order No. 539-B, issued July 27, 1976, FERC introduced a "prudent operator" standard for holders of FERC producer sale certificates, which would empower FERC to require producers to recomplete 1/ wells and drill new ones, and require other actions as necessary to provide natural gas, if FERC deemed such action to be economically and technically feasible.

FERC also initiated a proceeding which would involve the use of this 539-B authority to increase production of OCS gas from dedicated nonproducing reserves in the Federal domain in the Gulf of Mexico. The proceeding, FERC Docket No. RI75-112, was initiated on February 20, 1975, and involved 68 producers and 12 interstate pipelines as respondents. FERC staff found that immediate development of some of these reserves would serve the public interest by increasing gas supply to the interstate market, and recommended that if the producers did not voluntarily undertake such development, FERC would ensure it by using its 539-B authority.

FERC STAFF COMMENTS

The Commission did not provide comments on this report. FERC staff, in their comments on our draft report confirmed that FERC, by establishing the 539-B authority, had attempted to fill the regulatory gap created by USGS by pointing out that the Administrative Law Judge who presided over the Docket No. RI75-112 proceeding recognized

"* * * the desirability for more aggressive Federal agency exercise of statutory authorities with respect to Federal leases, particularly during the review of producers' exploration and development plans by the United States Geological Survey."

1/To "complete" a well is to do all things necessary to begin production. To "recomplete" a well is to plug the reservoir no longer producing and install production tubing so as to begin production of a reservoir that had been behind the pipe.

On January 20, 1978, the U.S. Fifth Circuit Court of Appeals ruled that FERC had no jurisdiction to require producers to adhere to Order 539-B, since the Natural Gas Act of 1938 specifically excluded FERC from jurisdiction over the production and gathering of natural gas.

FERC petitioned the U.S. Supreme Court on May 9, 1978, to review the Court of Appeals' decision. The Supreme Court, in a split decision, let the Court of Appeals' decision stand. FERC rescinded its Order 539-B on April 10, 1979.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The Government has no regulations for the diligent exploration, development, and production of natural gas from Federal lands. The Government has no policy for the role natural gas will play in meeting the Nation's energy needs from Federal lands in the context of an overall national natural gas policy. The absence of regulations and policy has

- hampered attempts by USGS to regulate diligence activities on Gulf of Mexico OCS leases and
- contributed to ineffective attempts by Federal agencies to increase natural gas production from the Gulf of Mexico OCS.

The use of the 5-year primary term of the leases as the sole requirement to control diligence of lessees was established in an era when the oil and natural gas supply easily met demand and the Government had little concern over the speed of exploration and development of the leases. However, in this era of natural gas shortages and curtailments, we believe the Government should have a policy and regulations with which to regulate the speed of exploration, development, and production.

Interior has not defined diligence nor has it regulated the level of development or production. It continues a "hands off" policy of letting the lessee determine how the lease is to be explored and developed.

Interior's emphasis is on activities after the end of the primary term and on fields already in production. Presently, the Government is not assured that the producing leases have been fully explored and developed. In contrast, other governments have specific requirements for exploration and development. We believe the level of development of a lease is very important but Interior has not adequately addressed it. In fact, Interior does not evaluate a company's development plan from the standpoint of what level of production it will allow or whether that level is appropriate.

Lessees of the majority of the tracts we examined had, through exploration and development activities performed in the first 3 years, brought the leases near production or had made a decision to relinquish apparently unproductive leases. In contrast, however, we found that some leases:

- Had qualifying wells drilled during the first or second year without further exploratory drilling for 4 or more years.
- Had unsuccessful wells drilled during the first or second year and no further drilling until the last year of the primary term.
- Were not drilled until the third or fourth year of the lease term.
- Were relinquished at the end of the 5-year primary term without having been drilled.
- Were held beyond the 5-year primary term, but were never drilled.

We believe such experience provides a reasonable basis for pinpointing the end of the third lease year as the time when the Government should begin to seriously examine the pace of lease exploration and development and act where appropriate to ensure adequate progress on leases in the Gulf of Mexico OCS. USGS already has a vehicle to use in making this determination--the development plan submitted by the lessee.

On the basis of our analysis of two leases sales, we believe such requirements would

- enable the Government to ensure that the leases are explored and developed in a timely manner, thereby helping to maximize annual additions to natural gas reserves and
- provide guidance for lessees in determining how fast new discoveries would be produced to ensure availability of appropriate levels of natural gas over time.

To facilitate Interior's regulation of diligence during the primary term, DOE should require lessees in the Gulf

of Mexico OCS who have not submitted a development plan by the third lease year to provide a statement explaining the problems being experienced, the planned actions to overcome the problems, and a schedule for completing the actions. DOE should issue regulations to impose currently authorized sanctions against lessees who fail to comply either during or after the primary term. If the penalties used by other governments' agencies (see pp. 24 to 26) would be useful, congressional authority to use them should be sought.

A procedure similar to that which we used in examining the Gulf of Mexico OCS leases could be used to examine, for other OCS areas and onshore Government lands, the timing of such regulatory activities in those areas and determine an appropriate time for the evaluation of the lessees' progress.

Interior has spent millions of dollars on contracts and inhouse studies of developed leases in attempts to identify opportunities to increase production of natural gas in the Gulf of Mexico OCS. These activities have met with little success, however, but Interior is presently engaged in still more studies of additional leases.

The Lease Extension Review Committee's work is a step in the right direction, but it does not address the more basic and critical need--a policy for exploration, development, and production. A policy is needed to provide a common basis for responsible and appropriate actions by lessees and USGS alike.

Interior has tried unsuccessfully to establish rates of production for developed leases to be used as a measure of diligent production. These production rates would be ineffective because they would be established after production facilities have been installed which have physical limits on the level of production that they can achieve. Also, there are other programs that are established or being developed for estimating resources and reserves. We believe that these programs, coupled with our recommendations that regulations for diligence in the level of production be established and applied when Interior evaluates the lessees' lease development plans, will accomplish the major intent of the legislation requiring that rates of production be set. Therefore, the legislative requirements that rates of production be established should be repealed.

AGENCY COMMENTS

We received comments on our proposed report from DOE (see app. I) and Interior (see app. II). Also, FERC staff provided comments, but the Commission did not. These comments were considered in the preparation of our final report, and specific comments are discussed in the sections dealing with the matters they addressed.

RECOMMENDATIONS TO THE SECRETARY OF ENERGY

We recommend that the Secretary of Energy:

- Fulfill the requirement mandated by the Congress to develop a policy which establishes the role of natural gas in meeting the Nation's energy needs. The policy should specifically address the role of natural gas from the Federal domain.
- Establish and issue regulations in cooperation with the Secretary of the Interior and the Chairman, Federal Energy Regulatory Commission, to govern the diligence of lessees in the exploration, development, and production of natural gas on the Federal domain. To enhance the enforcement of diligence, the regulations should require that lessees who have not submitted a development plan by the end of the third year of the primary term submit a statement on (1) problems that have prevented its preparation, (2) actions the lessee is taking to overcome the problems, and (3) the estimated time needed to take the actions. The regulations should provide for application of currently authorized sanctions against lessees who fail to meet the diligence requirements, both during the primary term and afterward. If he finds the penalties used by other governments, as discussed in this report, to be useful, he should seek congressional authority to use them.
- Include a schedule for issuing the policy and regulations in his written statement to the House Committee on Government Operations and the Senate Committee on Governmental Affairs required under section 236 of the Legislative Reorganization Act of 1970.

RECOMMENDATIONS TO THE
SECRETARY OF THE INTERIOR

We recommend that the Secretary of the Interior:

- Defer efforts to review additional Gulf of Mexico fields for the purpose of identifying opportunities for increased production until such time as a policy and implementing regulations for natural gas production have been established which provide the Secretary a basis for requiring specific development and production actions by the lessee.
- Provide the Secretary of Energy full assistance and cooperation in implementing our recommendations to the Secretary of Energy, including the use of Interior personnel to further the objectives of DOE's Oil and Gas Reserves Data Validation Program.

RECOMMENDATIONS TO THE CONGRESS

We recommend that the Congress:

- Not appropriate funds for the USGS OCS Reservoir Shut-in/Diligence Program until the policy and regulations have been issued and the USGS program re-justified.
- Repeal those portions of EPCA and the OCS Lands Act Amendments of 1978 (section 606(d)(1)(A), (B)) which require the Government to establish, enforce, and report on production rates on Federal lands.



Department of Energy
Washington, D.C. 20545

AUG 9 1978

Mr. Monte Canfield, Jr.
Director, Energy and Minerals Division
U. S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Canfield:

Thank you for the opportunity to review and comment on the GAO draft report entitled "Policies Needed To Guide Natural Gas Regulation On Federal Lands." Our views with respect to the text of the report and recommendations made by GAO are discussed below.

We believe that the GAO conclusions were based solely on the data shown in Appendix I, which relate only to two OCS lease sales (235 leases sold in the 1970 and 1972 OCS lease sales). A greater number of leases from more sales (preferably all sales) should be evaluated to provide a more typical pattern of timing of exploration, development and production. The type of tracts and characteristics of the prospects vary between sales and even areas. Some sales include a higher percentage of wildcat tracts while other sales consist primarily of drainage and extension tracts. Drilling practices and timing for development will necessarily reflect the type of prospect being tested.

Characteristics of the December 1970 and December 1972 leases may show greater distortion of drilling activity than any other lease sales held in the Gulf of Mexico. The December 1970 sale was the first major lease offering after passage of NEPA and after that sale, because of legal challenges to the Federal leasing program, leasing was halted until December 1972, except for two drainage sales. The uncertainty of the future leasing program and the lack of new leases undoubtedly influenced exploration and development patterns. The two-year delay in conducting sales caused the lease inventories to be depleted to the extent that rigs were available to commence drilling immediately on tracts sold in December 1972. This explanation is supported by the Appendix I graphs showing exploration and development drilling timing for the 1970 and 1972 sales.

The investigation of diligence should go beyond the speed of exploration and development to include the factors that influence the timing of operations. The report should also have addressed such factors as the impact of delay imposed by the permit process, surveys required under special stipulations, environmental studies and pipeline access.

(See GAO note on p. 54.)

The analysis also fails to indicate that ancillary factors, such as the availability of drilling rigs, capital and manpower, platform fabrication facilities, and pipeline infrastructure, were taken into account. The findings might well be very different if these ancillary factors had been considered. For instance, mobile drilling rig availability has had a pronounced impact on the Gulf of Mexico drilling activities. Rig movement responds to worldwide demand. During the period when leasing was delayed by litigation challenging the adequacy of lease sale environmental statements, many of the rigs were moved to the North Sea, the Middle East and other parts of the world. Only when the uncertainty of sale scheduling was reduced did the rigs return to the U. S. waters. Even so, there is now a shortage of jackup rigs, which is the type best suited to the shallow water of the Gulf of Mexico. This type of impact is not shown in the study analysis.

There are also specific problems in the report that deserve comment. For example:

It is incorrect to state that Section 8 leases normally cover 5,760 acres (p. 3). The Act states that leases may not exceed 5,760 acres. Because of the protraction grid system used, the maximum lease size in the OCS off Louisiana is 5,000 acres, but many leases contain smaller acreage due to irregular or partial tracts.

The study also states that, "The Director, Office of Leasing Programs, DOE, has been delegated responsibility for developing a national natural gas policy." (p. 14). This authority has not been delegated to the Leasing Policy Development Office (formerly Leasing Programs Office). The jurisdiction of LPDO is limited to those matters transferred to DOE by the DOE Act relating to leasing on Federal lands.

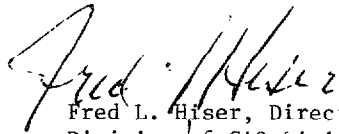
The recommendation that the Secretary develop a policy establishing the role of natural gas in meeting the nation's energy requirements has already been accomplished. This policy is contained in the National Energy Act now pending before Congress. The report also recommends that the Secretary issue regulations establishing diligence requirements for natural gas leases on Federal lands. We agree with this recommendation and fully intend to carry it out. DOE is currently in the process of planning the preparation of diligence requirements. However, factors affecting the speed with which diligence regulations can be prepared are not covered. DOE is a new agency having been in existence only since October 1, 1977. It is much too soon to judge the agency's performance. This is particularly true in view of the fact that when DOE inherited DOI's diligence responsibilities on October 1, there were no diligence regulations in place nor were there any criteria developed by DOI to evaluate lessees' diligence. DOE, therefore, has had to start from the beginning to develop such criteria.

The report further recommends that lessees who have not submitted a development plan by the end of the third year of the primary term be required to submit a statement (1) that explains the problems preventing its preparation, (2) the actions that lessee is taking to overcome the problems, and (3) the time needed to take such actions. The data and analysis contained in the draft report are simply too limited to reach a conclusion on this matter. Regulations developed by DOE will be based upon a comprehensive analysis of all factors involved in achieving timely resource development for all areas of the OCS.

The draft report also recommends that Congress not appropriate funds for the USGS OCS Reservoir Shut-in/Diligence Program until diligence regulations have been issued and the USGS program rejustified. We do not agree with this recommendation because the data collected in this program could be useful to DOE in developing diligence criteria and regulations. More comprehensive data and analysis are needed before diligence criteria and regulations can be developed.

The Federal Energy Regulatory Commission is furnishing you comments under separate cover.

Sincerely,


Fred L. Hiser, Director
Division of GAO Liaison

GAO note: Page and appendix references in this appendix refer to the draft report and do not necessarily agree with the page numbers in this final report.



United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

SEP 5 1978

Mr. Monte Canfield
Director, Energy & Minerals
Division
U.S. Government Accounting Office
Washington, D. C. 20548

Dear Mr. Canfield:

This is in response to your request for comments on the draft "Report on Natural Gas Regulation on Federal Lands." We believe this report is mis-titled. In effect, it is a critical evaluation of current U.S. Department of the Interior diligence policy, and goes beyond natural gas to diligent development of oil. As a report on diligence, the draft document is incomplete and gives a misleading impression of current policies and those options which might be pursued in the future. While we find merit with some recommendations, we believe the report should be substantially modified before final release.

Regulation of leases in order to assure diligent development can take place at three principal levels:

- providing review and enforcement to assure exploration and development is diligently pursued during the primary term of a lease,
- examining producing and potential fields to ascertain whether accelerated production through additional development activities is technically and environmentally acceptable,
- establishing and enforcing actual rates of production on a reservoir or field basis.

To put these diligence options in proper perspective, when this Administration took office, the diligence policy was one of great latitude. Operators were allowed to set their own pace and level of exploration and development with minimal regulatory interference. Leases were routinely extended beyond their primary term without specific action requirements, and no significant efforts had been made to ascertain the potential for increased production.

This has all changed in a major way. To state, as GAO does, that there is no diligence policy and that effective regulation cannot proceed until such a policy is established, badly mis-states the current situation. It is difficult for us to understand how GAO could have inadvertently omitted a description of the current policy. Enclosed is a summary of the major policy statements on diligence by the Secretary of the Interior since February 1977. In two of the three levels discussed above, major efforts are underway. The third, establishing production rates under the terms of the Energy Policy and Conservation Act, was transferred to the Department of Energy. This requirement received detailed evaluation in this Department prior to transfer. We are concerned about the potential benefits of this program in relation to the substantial costs of implementation.

The first level--that a lease should be developed during its primary term except for good cause--is the only policy established by the OCS Lands Act, albeit indirectly. This is not changed significantly by the pending OCS Lands Act amendments. Since February 1977, the Interior Department has moved from a policy of routinely granting suspensions of operation, thereby extending the primary lease term, to one of review of all SOP requests by Geological Survey and the Assistant Secretary for Energy and Minerals. The Department has established two criteria for the approval of SOP requests:

1. The request must present a timetable of exploration and/or development activities leading to the commencement of production, and
2. The amount of time granted to perform the activities must be reasonable.

Failing this, the SOP will not be granted. In addition, as discussed in the enclosure, criteria have been established and new measures are being taken to assure diligent development of units.

GAO recommends that additional measures be taken to assure appropriate operational activities within the primary term of a lease. We believe this approach may have significant benefits, and we are carefully considering the suggestion. The necessary criteria for review of such plans and appropriate enforcement measures will also be considered.

The second level of diligence has also been implemented by the Department through field studies and follow-up actions. For this level of diligence, GAO makes what appears to be its principal recommendation: that the Department "defer efforts to review additional Gulf of Mexico fields for the purpose of identifying opportunities for increased production until such time as a policy (and implementing regulations) for natural gas production has been established which provides the Secretary a basis for requiring specific development and production actions by the lessee."

We strongly oppose this recommendation. The policy that is currently in effect is that where a field study establishes that additional production is technically, economically and legally feasible, and environmentally acceptable, the operator will be instructed to take the needed measures to increase production. This policy can be implemented within current regulations. In fact, GAO fails to state what additional regulations are needed. Because the determinations depend so heavily on the circumstances prevailing in a given field, we doubt that much would be added by additional regulations.

The Draft Report does not present any compelling reasons to defer the field studies. Such studies are basic to any diligence effort directed at increased production. The field studies are a continuing effort to determine if acceleration of production is possible and if new reserves can be added. No policy can proceed and the ultimate diligence decisions cannot be made without the time and expense of field studies. The factors necessary to a field study are varied and numerous. Each field is unique in its characteristics and must be considered on its own merits. The data which contribute to field performance must be gathered, studied, and placed in perspective in order to make a diligence decision. Terminating the field studies would effectively terminate this major aspect of the diligence program.

Furthermore, the data obtained from the field studies program will be needed for development and testing of optional approaches prior to implementation of any new regulations. GAO recommends that the USGS work with the Department of Energy for the development of policy and regulations for diligent development. To eliminate the source of information necessary to project the future impact of proposed policy options and regulations while strongly recommending the establishment of policy seems to be contradictory.

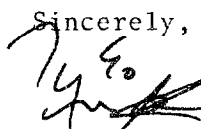
Whatever new policy for diligence might be established, the ultimate decisions cannot be made objectively without the time and expense of field studies. Postponing the collection and analysis of such data will only lengthen the time between the establishment of such regulations and their implementation.

GAO implies that the reserve survey and verification proposed by EIA will provide the information needed by the Survey to conduct its other functions, especially diligence. This is clearly not the case, and indicates a major misunderstanding of the type data needed for both diligent enforcement and a reserves inventory. We addressed this issue in our comments on your recent report on reserves inventory.

The draft report makes several inaccurate references to the respective responsibilities of the Department of the Interior and Energy concerning the offshore oil and gas program. For example, page 1 states that "Previously the Department of the Interior had the major role in the oil and natural gas activities on the OCS." This statement incorrectly implies that the Department no longer has the major role. DOE has been assigned the responsibility for issuing regulations in certain specific areas but the major management role still lies with the Department of the Interior. Leasing decisions remain the responsibility of the Department of the Interior, as does the surveillance and regulation of post-sale activities. Also, page 6 states that the Secretary of Energy would make the determination if a bidder has been diligent on other leases. This is not the case--DOE's role is limited to issuing regulations concerning diligence. A more complete review of the GAO draft report is enclosed which addresses other recommendations and points out problems and discrepancies.

The Department had one profitable meeting with your staff during the conduct of this study. I believe that an additional session with you and your senior staff and the staff of the Assistant Secretary--Energy and Minerals could be beneficial prior to the issuance of this report.

Sincerely,


J. G. McCreath
Assistant Secretary
of the Interior

Enclosure

(See GAO note on p. 69.)

Comments on the GAO Draft Report, Policies Needed
to Guide Gas Regulation on Federal Lands

The DOI recognizes the need for diligence in operations and denies that policy is not apparent by the actions being taken by the Secretary. The DOI is well aware of the problems in making explicit diligence policy within the limits of the statutes in this era of declining production. On numerous occasions over the past 1-1½ years, the Secretary has voiced his concern for timely development and has indicated that operators who are not conducting their activities in an expeditious manner face lease termination. The current policy on diligence is evidenced by the following announcements:

DOI News Release, February 17, 1977:

"Such a review is necessary if the Interior Department is to meet its obligation to the American people to see that the maximum amount of gas is available from the Outer Continental Shelf consistent with safety and good conservation practices," Andrus said.

DOI News Release, March 3, 1977:

"In a precedent-setting action, Interior Secretary Cecil D. Andrus today refused to grant a six-month extension for an oil and gas company to develop a lease in Federal waters in the Gulf of Mexico."

DOI News Release, March 23, 1977:

"Interior Secretary Cecil D. Andrus has ordered two companies holding seven Federal oil and gas leases in the Gulf of Mexico to furnish details this week as to why their leases should not be producing, or face the possibility of losing them."

Secretary's letter to offshore operators, May 27, 1977:

"In order to ensure all storage facilities are filled and present gas demands are met, you are directed to continue maximum production from all non-rate sensitive gas reservoirs without the limitations of OCS Order No. 11."

DOI News Release, June 8, 1977:

"Interior Secretary Cecil D. Andrus has cancelled two Federal oil and gas leases in the Gulf of Mexico for lack of drilling activity since his February 17 announcement that no non-producing lease would be extended beyond its primary five-year term without his approval."

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"Interior Secretary Cecil D. Andrus has cancelled two Federal oil and gas leases in the Gulf of Mexico for lack of drilling activity since his February 17 announcement that no non-producing lease would be extended beyond its primary five-year term without his approval."

DOI News Release, October 28, 1977:

"We conclude," Andrus told Texaco after reviewing the studies, "that continuing your present production program for lease OCS 0310 (Tiger Shoal) would not constitute proper and timely development in accordance with good operating practices."

"Accordingly, I order you to submit a plan by December 1, 1977, to diligently drill and produce additional wells in the Tiger Shoal field. This plan shall provide for significantly increasing production in the short run."

DOI News Release, April 27, 1978:

"It is the policy of this Department to require diligent development of all OCS leases. This in fact means that when a company signs an OCS oil and gas lease it must make an internal commitment to exploring and developing any resources in the lease in a timely manner."

Secretary's letter to Chevron, April 28, 1978:

"In reviewing the history of activities on the Santa Clara Unit, I am concerned that development is not proceeding in accordance with the Department's standards of diligence. As you know, I have not awarded a suspension of production for an individual lease without committing the lease to a schedule calling for expeditious development and the commencement of production. I also expect development of units to proceed expeditiously. By expeditious development of a unit, I mean timely and concurrent development of all potential hydrocarbon accumulations on leases committed to the unit. The plan under which you are now operating, however, calls for sequential development."

DOI News Release, June 23, 1978:

"In the absence of diligence in your efforts to explore the area in question in a timely manner, I am denying your request for designation of the subject leases as the Santa Cruz Unit," Andrus said in a letter to the companies.

"It is my policy now, as in the past, to assure that all leases on Federal lands be developed and production made available to the American public as expeditiously as possible. Unfortunately your past efforts on the subject leases do not meet this criteria."

In an earlier response to the GAO draft report "Natural Gas Reserves Estimates: A Good Field Program Emerging, but Problems and Duplications Persist," the DOI indicated its position on the DOE's validation and concluded with the statement as follows: "We will conduct the validation of OCS field reserves for EIA, but vigorously oppose termination of funding for our existing necessary programs."

Furthermore, the Congress has approved a diligence review program for 1978 and in the Appropriations Bill they included the statement as follows:

"A total of \$7,800,000 is provided for regulation of outer continental shelf oil and gas operations, including \$2 million to expand the leased management program into new sales areas, to complete inventory of reservoirs on the outer continental shelf and to initiate a program of diligence review based on the reservoir inventory."

The GAO states that a diligence policy should serve as a guide to standards for expediency in exploration and production operations.

Without such a policy, they contend the following from pages v and vi:

- USGS will be unable to regulate lessee's diligence;
- information systems being established will be able only to provide data on lease status, but will not assist in diligence regulations;
- some leases will continue to be developed too slowly; and
- charges will persist that the Gulf of Mexico OCS is not being explored, developed, and produced rapidly enough, and costly studies will be made to determine the validity of the charges.

GAO's contentions from above are based largely upon their understanding of lease operations in the Federal Gulf of Mexico. Since these contentions appear to be the framework for their report, a response to each is submitted as follows:

- (1) USGS will be unable to regulate lessee's diligence.

The Geological Survey (GS) can and will regulate diligence to the limit of the statutes. The Secretary of the DOI has directed that diligence shall be an issue in lease operations and that diligent development shall be required of all leases. His response to the public time and again have projected his intentions concerning diligence. As pointed out in the cover letter, a strong diligence program is now in effect.

The GS understands and will apply revised criteria for unitization of leases as set forth in a memorandum by the Solicitor, June 6, 1978, a letter to Chevron, April 28, 1978, and a DOI news release, June 23, 1978. A revised unit form is now under consideration by the Assistant Secretary--Energy and Minerals to better control diligence in operations and to limit the area proposed for unitization.

- (2) Information systems being established will only be able to provide data on lease status, but will not assist in diligence regulation.

We fail to understand this criticism. The GS reaction to criticisms over diligence standards was reflected in their decisions to make and to continue making field studies of gas fields in the Gulf of Mexico. Such studies are necessary to determine if acceleration of the production is feasible and economical and if increased recovery is possible through a workover or new well or through an injection project (for oil). Without such studies, decisions concerning diligence can hardly be more than arbitrary.

The GS is now reorganizing the Conservation Division's (CD) Gulf of Mexico Region to emphasize control in operations. One oil and gas supervisor will be charged with the enforcement of diligence in production and another with the enforcement of diligence in drilling activities.

The GS maintains certain ongoing reports to provide information on lease status and activities. Pending a special need, operators are requested to provide additional information. Such is the case with Plans of Operation for inactive leases late in the 5-year primary term, which have been requested twice in recent years.

- (3) Some leases will continue to be developed too slowly.

The GAO studied the pace of activities on the leases issued with two lease sales, and from the study they deducted (on page 55) that lessees should be required to explain their inactivity if no plan had been submitted by the third year and to require concurrently that the lessee set forth a plan for action. For those who fail to comply, the GAO suggests a financial penalty or other punitive measure.

Requiring a Plan of Operation by the third year of a lease where there has been no previous activity is feasible and is being considered by DOI. We will also consider appropriate enforcement measures. We are aware that some of the leases with little potential receive no attention until the fourth or fifth year. A few leases are terminated with no more than seismic recordings as a record of the action.

The GAO suggested above that punitive action should be taken against a lessee under certain conditions of inactivity in the primary term. Otherwise, for those cases of development being too slow, no alternatives were offered.

The crux of this matter is not the policy issue because the Secretary has said repeatedly that diligence in operations shall prevail or leases shall face termination. The real issue lies in the determination itself since many factors must be considered in a broad sense, all the way from the operator's position to the Nation's position.

Inherent among these factors are certain development fundamentals as follows:

- (a) Leases vary in worth and the proof of worth lies only with continued investments.

- (b) Operators have varying capital assets and they think differently about where investments should be sunk.
- (c) Operators invest sizeably up front. They want early returns as evidenced by the continuing year-to-year drop in the reserves-to-production rate ratio.
- (d) Only a small percentage of the leases ultimately produce in significant amounts.
- (e) The nation wants a vast storage of gas always large enough to avert a crisis.

Once a discovery is made, steps must be taken to show progress in bringing the well on stream. Exactly how fast the operator should do so is a function of circumstances such as equipment availability and the need for additional exploration. The Assistant Secretary--Energy and Minerals and/or the Geological Survey (GS), as the case may be, know the equipment circumstances and about how much time is involved with particular operations. From such knowledge, diligence in early lease development can be assured.

The GAO infers without supporting evidence that leases are being and will continue to be developed "too slowly." They imply that all leases are alike and that any flexibility provided in a diligence policy is wrong. They fail to consider the complexities of lease development when the resources being sought are still very speculative.

- (4) Charges will persist that the Gulf of Mexico OCS is not being explored, developed, and produced rapidly enough and costly studies will be made to determine the validity of the charges.

The GAO is unrealistic in thinking that a policy statement on diligence will alleviate the stated charges of not producing rapidly enough and causing follow-up studies. A policy statement may say no more than "***Leases shall be explored and developed expeditiously." The Secretary has not deterred from such a policy and yet certain critics persist in their allegations that operators are not exploring, developing, or producing fast enough.

Gas production from the Gulf of Mexico has continued to increase over the last year due largely to new leases coming on stream, but the Secretary's letter of May 27, 1977, to offshore operators assured the public that the Maximum Efficient Rate (MER) would not be a curtailment to natural gas production. The letter was responsive to the nation's needs for gas. It is continuing in effect.

But even with the positive reaction offshore in maintaining and increasing production rates, another severe winter coupled with declining domestic production will bring about a shortage somewhere and the critics will surface again. Such a process is not unusual for a nation in the grips of declining supplies and increasing demands. A simple policy statement, whatever it says, will not suffice for the natural gas shortages ahead.

On page vii the GAO states that the DOI gives high priority to other than "* * * development of a natural gas policy or guidelines for exploration, development, or production of natural gas from the Federal domain." In making this statement the GAO refers to page 14 which reads, "At DOI, the current emphasis is on further studies. Decisions concerning lease extensions and field development continued to be made on a case-by-case basis without the benefit of policy or procedural guidelines."

As stated earlier, the DOI has established a diligence policy and guidance materials have been furnished for lease development and unitization. The DOI policy is in the public interest. It is based on the nation's needs for additional gas reserves and production. The DOI has no function of greater importance than the enforcement of diligence on Federal leases as provided by the statutes. The GS field study completed on the Tiger Shoal field was done independently of and was submitted earlier than the National Research Council (NRC) study. The GS study showed that acceleration of production was feasible and economical in about the same way as the NRC study.

Field studies are essential to any diligence determination. Any decision made in today's circumstances must be in line with the nation's precarious supply-demand situation which in itself dictates policy. Thus, the DOI intends to continue its field studies and other related programs as an essential element to the diligence program. For the DOI to carry on this work meaningfully, more qualified personnel are needed than can be hired.

By way of explanation, a field study involves a confirmation of the reserve estimate through production performance. It concludes with a production forecast to depletion. For those fields without updated reserve estimates but with substantial production history and reservoir data, material balance equations are attempted and sometimes successfully used to check and verify the volumetric estimate of the original gas (or oil) in place.

In the case of gas, these calculations necessarily take into account the gas production, the expansion of the gas left in the reservoir, water encroachment, and water production. With the water encroachment and the gas expansion unknown, a solution to the original gas in place means trial-and-error calculations until a reasonable match of the data results. Once the original gas in place is determined and a pressure trend can be established, the sweep efficiency can be calculated with reasonable accuracy.

Plainly all such calculations require good data and substantial production history. But even with these prerequisites, a material balance solution is not always possible.

When the reserves for all reservoirs have been confirmed, a program of workovers and drilling must be designed to deplete the field assuming reasonable circumstances. Such a program would be considered as the normal decline with due concern for costs, prices, and profit. It would conclude with a decline curve reflective of the field's future. An alternate program would then be worked out to show the feasibility and economics of acceleration in production beyond the normal. The economic yardsticks would include cash flow, net present value, and rate of return. A decision as to the appropriate program to follow would then be made, and the operator would be required to submit a plan adhering to the decision. Any plan to the contrary would require justification through a study submitted by the operator.

On several pages of the report, the GAO offers statistical and other types of information which appear to be in error. These are pointed out and explained as follows:

Page iv. DOI has spent millions of dollars on contracts and in-house studies of developed leases in attempts to identify opportunities to increase production of natural gas in the Gulf of Mexico OCS.

The Conservation Division's offshore budget for FY 1978 and FY 1979 is \$3.648 million respectively for each year with 103 positions for diligence monitoring and enforcement. The program provides for the examination and verification of shut-in wells, the examination of producible shut-in leases, the identification of reservoirs where exploratory wells should be drilled, and the study of large gas fields where additional operations might result in added production.

The GAO apparently is unaware that the NRC study of six gas fields cost less than \$600,000 and that the CS study of the Tiger Shoal field cost less than \$90,000. The six field studies now in progress are not expected to run more than \$1 million. The problem with such a program is not the cost as much as it is in hiring qualified personnel. The remaining budget is allocated for other diligence measures, which include the following:

- suspension of production
- shut-in wells
- production tests and pressure surveys
- improved recovery projects.

Page 2. OCS management is carried out by four regional offices-- Mid-Atlantic, Gulf of Mexico, Pacific, and Gulf of Alaska.

The OCS management is limited to three regional offices which are named Eastern, Gulf of Mexico, and Western.

- Page 3. Each Conservation Manager has issued OCS Orders implementing the regulations issued by the Secretary.

The OCS Orders are issued by the Area Oil and Gas Supervisor with the approval of the Chief, Conservation Division.

- Page 7. The Gulf of Mexico supplies about 11 percent of the nation's natural gas consumption.

Actually the Federal Gulf of Mexico leases are now supplying about 18.0 percent of the nation's gas.

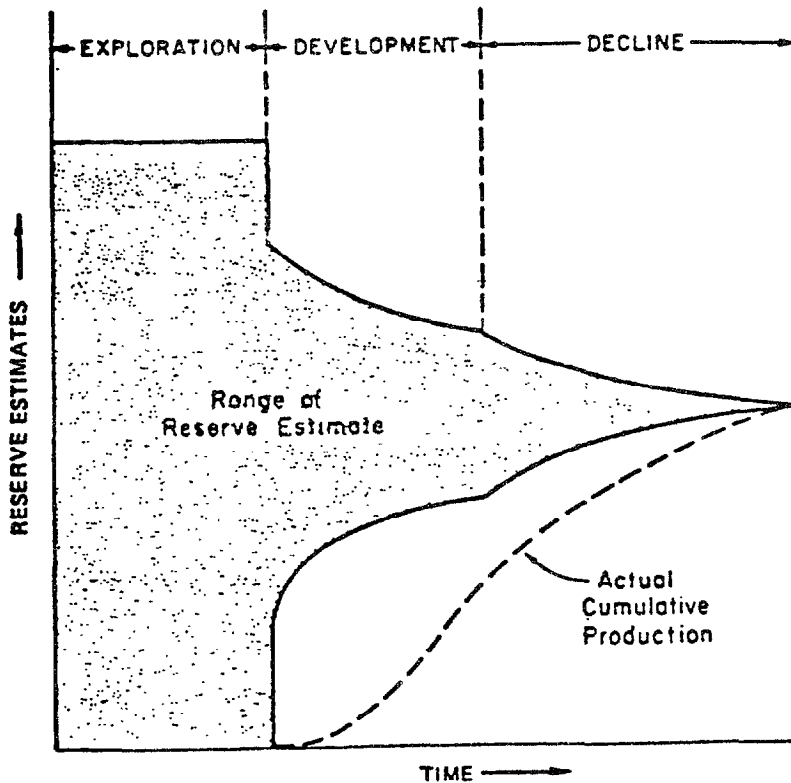
- Page 17. The changes adopted deal only with lease development once the lease passed the primary term, too late for crucial production decisions, such as platform size (including the number of wells to be drilled), pipeline size, and other facilities, that limit production capability.

Apparently some misunderstanding exists as to the conditions for a suspension of production under 30 CFR 250.12(d). A suspension is approved on producible shut-in leases where the operator has a producible well at the end of the primary term but is unable to bring the well on stream until additional work can be done. The suspension gives the operator time to do the work. Installing a platform, laying a pipeline, and drilling wells are appropriate activities for lease development and for issuing a suspension of production.

- Page 54. We found that DOI's emphasis is on diligence after the end of the primary term and on fields already in production. We believe the level of development of a lease is very important but DOI has not adequately addressed it. In fact, DOI does not evaluate a company's development plan from the standpoint of what level of production it will allow or whether that level is appropriate.

Perhaps GAO's confusion lies in the mistaken belief that all activities on a 5,000 acre lease are clear-cut; that is, that exploration, development, and production occur as precise phases in lease operations. Also, that reserves are estimated with considerable accuracy before development begins and any revisions thereafter are only minimal.

By way of explanation, a great amount of risk is involved with initial development activities. In only a few instances does the operator know with any certainty what the reserves are when the first platform is ordered out. The schematic below, taken from a paper of the 1950's, continues to exemplify the wide range for the reserve estimates of a given property until development drilling and production are well advanced.



In the Gulf of Mexico (in most cases) the operator prefers to set the first platform with no more than one to three discovery wells because additional delineation wells are costly and platform wells (with limitations) can be drilled for both delineation and production purposes. Under such circumstances, the operator tends to oversize the platform unless fully informed and confident about the reserves and sales facilities.

In setting forth the plan of development for the platform drilling, the operator offers structure maps which serve as justification for the venture. Until the wells drilled fully define the area, the operator necessarily must re-map the sands of interest with every penetration. The operator hopes to make discoveries even with platform wells. If he finds instead that the discovered sands are small and no others exist, then his large platform (maybe 20 slots) ends up with no more than a few slots (maybe 5) in use.

Neither the DOI nor any other agency can control the development of a lease under such circumstances. The DOI can require that an operator pursue a plan, but the operator cannot be forced to drill wells or set platforms where risk is apparent.

Within this framework of understanding, the DOI places emphasis upon diligence through lease plans as required by 30 CFR 250.34 and 250.12(d), through unit terms and the resulting plans, and on field studies after the field is established and production history is adequate to accurately define the reservoirs.

In summary, the DOI is performing responsibly under the OCS Lands Act and is cooperating fully with the DOE in its regulatory assignments. The DOI is not in agreement with the GAO recommendations to stop the Congressionally-approved program on diligence and to reassign the personnel to DOE's Reserves Validation Program. The policy and activities of the DOI in the area of diligence in the Gulf of Mexico are reiterated as follows:

1. The GS is managing responsibly under policy by the Secretary to require expeditious exploration and production within reason.
2. The Assistant Secretary--Energy and Minerals, with the support of the GS, is continuing to require a schedule within which operations must be conducted in order for applications for suspensions of production to be approved. Such applications may be submitted when a lease has a producible well but is not on stream by the end of the primary term.
3. The GS is requiring work by schedule in the approval to Unit Plans of Operation. The GS is assisting the Assistant Secretary--Energy and Minerals in devising regulations and a unit form which will assure exploration of the unit area and will limit the area to be included in a unit.
4. The GS is continuing to make field studies where opportunities appear to exist for increased production. A diligence determination is not considered possible until all facets of the field have been studied. Such a determination must include not only the capability of the field but also the reasonableness of the economics, the legal aspects, and environmental concerns.
5. The GS is gathering large amounts of data for purposes of diligence determination in conjunction with field studies. Included are data on shut-in wells, production tests, pressure surveys, and improved recovery projects.

GAO note: Page references in this appendix refer to the draft report and do not necessarily agree with the page numbers in this final report.

OFFICIALS RESPONSIBLE FOR ACTIVITIESDISCUSSED IN THIS REPORT

<u>Tenure of Office</u>	
<u>From</u>	<u>To</u>

DEPARTMENT OF ENERGY

SECRETARY

James R. Schlesinger	Oct. 1977	Present
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ASSISTANT SECRETARY FOR
RESOURCE APPLICATION:

George S. McIsaac	Feb. 1978	Present
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CHAIRMAN, FEDERAL ENERGY
REGULATORY COMMISSION:

Charles B. Curtis	Oct. 1978	Present
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DEPARTMENT OF INTERIOR

SECRETARY:

Walter J. Hickel	Jan. 1969	Nov. 1970
Rogers C.B. Morton	Nov. 1970	Apr. 1975
Stanley K. Hathaway	Apr. 1975	July 1975
Thomas S. Kleppe	July 1975	Jan. 1977
Cecil D. Andrus	Jan. 1977	Present

ASSISTANT SECRETARY FOR
ENERGY AND MINERALS:

Hollis M. Dole	Mar. 1969	Mar. 1973
John B. Rigg (Acting)	Mar. 1973	Mar. 1973
Stephen A. Wakefield	Mar. 1973	Apr. 1974
William A. Vogely (Acting)	Apr. 1974	Aug. 1974
Jack W. Carlson	Aug. 1974	Jan. 1976
William L. Fisher (Acting)	Jan. 1976	Mar. 1976
William L. Fisher	Mar. 1976	Jan. 1977
William D. Bettenberg (Acting)	Jan. 1977	Apr. 1977
Joan M. Davenport	Apr. 1977	Present

SOLICITOR:

Mitchell Melich	Mar. 1969	Apr. 1973
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Leo M. Krulitz	Feb. 1977	Present

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