REPORT BY THE

Comptroller General

OF THE UNITED STATES

Congress Should Extend Mandate To Experiment With Alternative Bidding Systems In Leasing Offshore Lands

The Outer Continental Shelf Lands Act Amendments of 1978 required the Interior Department to experiment with alternatives to the traditional bidding system in leasing offshore lands for oil and gas development. This experiment, extending over a 5-year period, is scheduled to end in September 1983. The alternative systems are designed to reduce the amount of up-front money required by companies to obtain an offshore lease, in return for a greater share of the revenues from any follow-on production. By reducing up-front money, the alternative systems are supposed to increase participation and competition in offshore lease sales.

GAO found that the initial effects of the alternative systems on company participation and competition have generally paralleled or bettered the results of the traditional system, although up-front money required to obtain leases was not always reduced as theorized. Additional time and testing are needed before the full effects on the leasing program can be determined. Accordingly, GAO recommends that the legislation be amended to require use of the alternative systems for an additional 5 years so that more information will be available to judge their overall merits.

GAO/RCED-83-139
MAY 27, 1983

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

B-207556

The Honorable Michael L. Synar
Chairman, Subcommittee on Environment,
Energy, and Natural Resources
Committee on Government Operations
House of Representatives

Dear Mr. Chairman:

This report was prepared in response to the Subcommittee's March 8, 1982, letter requesting that we review the Interior Department's use of alternative bidding systems in leasing offshore lands for oil and gas development as mandated in the Outer Continental Shelf Lands Act Amendments of 1978. The report discusses Interior's record in implementing the alternative systems and also their impacts on company participation and competition in lease sales, Government revenues, diligent lease exploration and production, and administrative costs to the Government. We did not obtain agency comments on a draft of this report, but did discuss the report with departmental officials.

Unless this report is publicly announced by you, we plan no further distribution until 30 days from the date of the report. At that time, copies will be sent to the Director, Office of Management and Budget; the Secretary of the Interior; the Secretary of Energy; other House and Senate committees and subcommittees having oversight and appropriation responsibilities for the offshore leasing and development program; and other interested parties.

Sincerely yours,

Charles A. Bowsher

Comptroller General
of the United States

Enclosure

REPORT BY THE COMPTROLLER
GENERAL OF THE UNITED STATES

CONGRESS SHOULD EXTEND MANDATE TO EXPERIMENT WITH ALTERNATIVE BIDDING SYSTEMS IN LEASING OFFSHORE LANDS

D I G E S T

The Interior Department has traditionally leased offshore lands for oil and gas development under a bonus bid, fixed royalty bidding system. Under this system, companies submit cash bids, called bonuses, for the right to explore and develop offshore tracts. If production should occur, companies pay the Government a fixed royalty rate--traditionally 16-2/3 percent of the value of oil and gas produced. Because of the great amount of up-front bonus money required to obtain a tract, concerns have been expressed that this leasing arrangement limits the number of companies that can participate in offshore sales and reduces the amount of competition for offshore leases.

The Congress, in the 1978 amendments to the Outer Continental Shelf (OCS) Lands Act, mandated that alternatives to the traditional bidding system be used for between 20 and 60 percent of the offshore acreage offered for lease over the 5-year period ending September 1983. Conceptually, the alternative systems were designed to reduce the amount of up-front bonus money required to obtain a lease and, in return, require that the Government be paid a larger share of any follow-on production. Through the reduction of up-front money, these systems were supposed to increase company participation and competition in offshore lease sales--especially from smaller companies with limited financial resources.

In response to a request from the Chairman of the Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations, GAO reviewed the extent to which the Interior Department implemented the alternative bidding systems and the effects of using the systems on the offshore leasing program in terms of (1) company participation in offshore lease sales, (2) competition for leases, (3) revenues to the Government, (4) prompt lease exploration and production, and (5) additional administrative costs to the Government.

GAO/RCED-83-139
MAY 27, 1983

INCREASED USE OF ALTERNATIVE BIDDING SYSTEMS

Alternative bidding systems, first used in 1974, were tested on a limited basis in six offshore sales prior to the OCS Lands Act Amendments. Since the amendments, they have been used in all 17 offshore lease sales held through January 1982. Of the 3,741 tracts offered in these 23 sales, 1,491 tracts or 40 percent were offered under the alternative systems. GAO's review covers the bidding and leasing results from these 23 sales.[1]

The 1978 amendment authorized six basic alternative systems. The Interior Department has tested three of these systems:

--Royalty rate bid, fixed cash bonus system. Under this system, companies bid on the share of production, i.e., the royalty rate that they are willing to pay the Government if the lease is productive while the cash bonus is fixed by Interior at a nominal level. The highest royalty rate bid wins the lease. (See p. 9.)

--Cash bonus bid, fixed net profit share system. Under this system, the highest cash bonus bid wins the lease and a fixed share of the winning company's net profits from production is paid to the Government. (See p. 9.)

--Cash bonus bid, sliding scale royalty system. This system differs from the traditional system by establishing a royalty rate that increases or decreases with the value of production. Large discoveries with higher production rates result in higher royalty revenues to the Government. Six variations of this system have been tested by Interior, using different formulas for establishing the sliding scale royalty rates. (See pp. 9 and 10.)

In addition, Interior has offered tracts at a 33-1/3 percent royalty rate and a 12-1/2 percent royalty rate as variations of the

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[1]Data from the five OCS lease sales held later in 1982 was not available in sufficient time for inclusion in this review.

traditional cash bonus bid, fixed royalty rate approach.

Interior has not used three of the alternative systems:

--Net profit share bid, fixed cash bonus system.

--Cash bonus bid, fixed royalty rate and fixed net profit share system.

--Work commitment bid, fixed cash bonus and royalty rate system. Under this system, companies bid on the amount of money they are willing to spend on the exploration of a lease.

These alternative systems are perceived by the Interior Department as providing little incentive for prompt lease exploration and production. For explanations of these systems and the systems tested by Interior see pages 92 through 98.

IMPACTS ON PARTICIPATION, COMPETITION, AND BONUS BIDS

The initial impacts of each of the alternative systems tested on participation, competition, and bonus bids are shown in the following chart.

INITIAL IMPACTS OF THE ALTERNATIVE BIDDING SYSTEMS COMPARED TO THE TRADITIONAL SYSTEM

ALTERNATIVE SYSTEMS	IMPACTS ON PARTICIPATION	IMPACTS ON COMPETITION	IMPACTS ON BONUS BIDS
Royalty bid, fixed cash bonus	Similar	Increased	Decreased
Cash bonus bid, fixed 12-½% royalty	Similar	Similar	Similar
Cash bonus bid, fixed 33-1/3% royalty	Increased	Increased	Similar
Cash bonus bid, fixed net profit share	Decreased	Decreased	Decreased
Cash bonus bid, sliding scale royalty:			
• Formula 1	Decreased	Similar	Similar
• Formula 2	Similar	Similar	Similar
• Formula 3	Similar	Similar	Similar
• Formula 4	Increased	Increased	Increased
• Formula 5	Similar	Similar	Similar
• Formula 6	Increased	Increased	Decreased

As shown in the chart, three of the alternative systems have had a clear edge over the traditional cash bonus bid, fixed 16-2/3 royalty rate system in increasing both company participation and competition in OCS lease sales. These three systems are:

--formulas 4 and 6 of the cash bonus bid, sliding scale royalty system and

--the cash bonus bid, fixed 33-1/3 percent royalty rate system.

Only two of the systems were less effective than the traditional system in generating company participation or competition in OCS lease sales:

--the cash bonus bid, fixed net profit share system and

--formula 1 of the cash bonus bid, sliding scale royalty system.

It also is important to note that the alternative systems have not always worked as theorized. For example, of the three systems which bettered the traditional system in terms of participation and competition, only one reduced bonus bids. Of the other two, one increased bonus levels and one generated bonuses similar to the traditional system. Furthermore, while three of the systems increased participation and competition overall, GAO's analysis indicated that small companies and companies bidding for the first time in offshore lease sales have favored the traditional system rather than the alternative systems. The reasons why these impacts run counter to what was anticipated are not readily determinable. (See chs. 3 and 5.)

IMPACTS ON REVENUES, EXPLORATION, AND ADMINISTRATIVE COSTS NOT FULLY MEASURABLE

The full impacts of the alternative systems on prompt lease exploration and production cannot be measured at this time because insufficient time has elapsed for exploration activities to fully develop on most of the tracts leased under these systems. In addition, because of limited production, more time is needed before the impacts on total revenues to the Government can be determined. (See chs. 5 and 6.)

Another important impact--the administrative costs to the Government of using alternative

systems--also is not known at this time because such costs have not been identified by the Interior Department. Other than for the net profit sharing systems, however, Interior does not expect these costs to be significantly different from those of the traditional system. Administrative costs are expected to increase under the net profit share system because of the additional accounting requirements under this approach. (See ch. 7.)

CHANGING FEDERAL ROLES

Initially, the Department of Energy was responsible for (1) promulgating regulations implementing the new alternative systems, (2) reviewing Interior's selection and assignment of bidding systems to tracts offered for lease, and (3) reporting annually to the Congress on the use and impacts of the systems. The first two responsibilities were repealed in 1982, with the Secretary of Energy retaining the reporting responsibilties.

The OCS Lands Act requires the Secretary of the Interior to also report to the Congress within six months after the close of each fiscal year on the impacts of the alternative systems. While most of Interior's reporting requirements are similar to Energy's, there are some differences. For example, Energy's report is to include a detailed evaluation of the systems tested while Interior's report is to focus more on ways of promoting company participation and competition. Also, Interior's report is to include an evaluation of bidding systems not specifically authorized by the OCS Lands Act, which is not required in Energy's report. The Secretary of the Interior, however, relying on Energy's four annual reports, has not issued a report. GAO was told that one has been drafted and is due for issuance shortly. (See pp. 13 and 14.)

RECOMMENDATIONS TO THE CONGRESS

The initial effects of the alternative bidding systems on company participation and competition have generally paralleled or bettered the results of the traditional system, although up-front money required to obtain leases was not always reduced. Formulas 4 and 6 of the sliding

scale system and the cash bonus bid, 33-1/3 percent royalty system have produced especially encouraging results. However, additional time and testing are needed to determine the full impacts of the systems on Government revenues, lease exploration and production, and the costs to administer them.

This suggests that the Interior Department should continue using and testing the systems. Because of the long lead-time between the award of a lease and exploration, and the uncertainties associated with actually finding oil and gas, it is difficult to predict when adequate information will be available to make these judgments. Accordingly, GAO recommends that the Congress amend the OCS Lands Act to require continued use of alternatives to the cash bonus, fixed royalty bidding system in leasing offshore lands for another 5-year period. (See p. 58.)

In addition, because the Department of Energy's role in offshore leasing has been essentially eliminated, GAO recommends that the Congress amend the statute to transfer responsibilities for the annual report on the use of alternative systems from the Secretary of Energy to the Secretary of the Interior. (See p. 58.)

RECOMMENDATION TO THE SECRETARY OF THE INTERIOR

GAO also recommends that the Secretary of the Interior comply with the existing annual reporting requirements of the OCS Lands Act including a determination of the costs to administer the alternative systems. (See p. 59.)

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GAO did not obtain agency comments on this report but did brief departmental officials on its contents.

Contents

ABBREVIATIONS

BLM	Bureau of Land Management
CRF	capital recovery factor
CRSQ	corrected R-squared
GAO	General Accounting Office
MMS	Minerals Management Service
OCS	Outer Continental Shelf

CHAPTER 1

INTRODUCTION

Prior to the Outer Continental Shelf (OCS) Lands Act Amendments of 1978, the Government traditionally leased OCS lands under a cash bonus bid, fixed royalty rate bidding system. Under this system, companies submit cash bids on how much they are willing to pay in bonus money to obtain the right to explore and develop an OCS tract. The follow-on royalty, should production occur, has traditionally been fixed at 16-2/3 percent.[1] However, this bidding system has been criticized as limiting company participation and competition in OCS sales because of the large up-front bonus money needed to obtain a lease. The 1978 amendments mandated that alternatives to the traditional approach be used as an experiment to determine whether new bidding systems would increase company participation and competition in offshore leasing and development.[2]

Initially, the responsibility for implementing the new bidding systems was shared by the Departments of Energy and the Interior. However, most of the Department of Energy's offshore responsibilities were returned to the Interior Department in fiscal year 1982, giving Interior the primary responsibility for using and analyzing the new alternative methods for leasing offshore lands.

LEGISLATIVE PROVISIONS

The 1953 OCS Lands Act (Public Law 83-212) and its 1978 amendments (Public Law 95-372) are the central pieces of legislation governing the use of bidding systems for leasing offshore lands. The 1953 OCS Lands Act authorized bidding based on (1) a variable cash bonus bid with a fixed royalty, the bidding system traditionally used by Interior, or (2) a fixed cash bonus with the royalty rate being the bid variable. The 1978 OCS Lands Act Amendments greatly expanded the Federal Government's authority to use different bidding systems by authorizing five additional new systems for leasing OCS lands. Section 8(a)(5)(B) of the OCS Lands Act, as amended, also required the use of alternatives to the traditional cash bonus bid, fixed royalty rate system for at least 20 percent and not more than 60 percent of the offshore acreage offered for lease each year for a 5-year period ending in

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[1]The royalty is paid by the company awarded the lease and is a percentage of the value of oil and gas production saved, removed, or sold from the lease.

[2]Participation is defined in terms of the number of companies placing bids in OCS lease sales. Competition is defined as the number of bids submitted for each tract.

September 1983. The legislative history of the OCS Lands Act Amendments indicates that the Congress sought to determine whether alternatives to the traditional bidding approach would increase company participation and competition in OCS lease sales. Conceptually, the alternative systems were designed to reduce the amount of bonus money required to obtain a lease and, in return, require that the Government be paid a larger share of any follow-on production revenues.

FEDERAL RESPONSIBILITIES FOR OFFSHORE BIDDING SYSTEMS

The Department of the Interior has primary responsibility for setting the terms and conditions for acquiring and developing offshore leases. Within the Interior Department, the Minerals Management Service (MMS) has the day-to-day responsibility for OCS management. MMS offices in Los Angeles, California; Anchorage, Alaska; New Orleans, Louisiana; New York, New York; and Washington, D.C., have regional responsibilities for coordinating offshore activities.

Initially, the overall responsibility for the implementation of alternative bidding systems was shared by the Departments of Energy and the Interior. Energy was responsible for promulgating regulations implementing all bidding systems. Interior was responsible for the selection and assignment of bidding systems to tracts offered in the OCS lease sales, while the Energy Department had the authority to review Interior's selection and to disapprove systems it believed inappropriate in specific sale situations. With the passage of the Department of the Interior Appropriations Act for fiscal year 1982 (Public Law 97-100), most of the responsibilities given to the Energy Department for alternative bidding systems were repealed, with the Secretary of Energy retaining some reporting responsibilities.

OBJECTIVES, SCOPE, AND METHODOLOGY

This review responds to a request from the Chairman, Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations, who asked us to review the implementation of the alternative systems and to determine whether Interior had reduced the use of the traditional cash bonus bidding system. (See app. I.) We also reviewed the Interior Department's use of the alternative systems to determine the impacts of the new systems on (1) company participation in offshore lease sales, (2) competition for leases, (3) revenues to the Government, (4) prompt lease exploration and production, and (5) additional administrative costs to the Government.

We made two major assumptions in our review and evaluation. First, for the purposes of our analysis, we defined the bonus bid, fixed 16-2/3 percent royalty rate system as the traditional system and all other bidding schemes as alternative systems. The bonus

bid, 16-2/3 percent royalty rate system has been used traditionally in the past and is the standard with which to compare other bidding systems. Thus, Interior's use of a bonus bid with either a 12-1/2 or 33-1/3 percent royalty rate was treated as an alternative, although technically they are not so defined in the OCS Lands Act, as amended. We defined the traditional system this way to (1) isolate the impact of the bonus bid, 16-2/3 percent royalty rate on OCS leasing and development and (2) to compare the results of 12-1/2 and 33-1/3 percent royalty rates with other systems. Second, we considered each of the six sliding scale formulas tested under the bonus bid, sliding scale royalty alternative as a distinct bidding system because the variations in the formula should provide varied effects on OCS leasing and development. Thus, to determine the effectiveness of each formula, the impacts of each had to be analyzed separately.

In addition, since one of the major reasons for testing the alternative bidding systems was to determine whether they permit more small companies, having limited financial assets, to participate and compete in OCS lease sales, we classified all companies as being large or small. We defined large companies as those within the top 100 firms of the Fortunes 500 listing for 1978--the year of the OCS Lands Act Amendments. The 21 oil companies falling in the large classification, in alphabetical order, are:

Amerada Hess	Gulf Oil	Standard Oil Company of Indiana
Ashland Oil	Marathon Oil	Standard Oil Company of Ohio
Atlantic Richfield	Mobil Oil	Sun Oil
Cities Service	Occidental Petroleum	Tenneco
Conoco (Continental Oil)	Phillips Petroleum	Texaco
Exxon	R.J. Reynolds	Union Oil Company of California
Getty Oil	Shell Oil	
	Standard Oil Company of California	

Subsidiary companies were also grouped under the parent company. The other 202 companies participating in OCS lease sales were defined as small companies.

The scope of our review covers the bidding and leasing results from the 23 OCS lease sales in which alternative systems were used through January 1982.[3] We obtained data for the review from Interior Department computer data bases located in Reston, Virginia; Denver, Colorado; and New Orleans, Louisiana. We performed various assessments of the information in these data bases

[3]The Department of the Interior has held three full sales, one partial sale, and one resale after January 1982. (See app. VII.) Data from these sales was not available in sufficient time for analysis and inclusion in this review.

to assure ourselves that it was relevant, accurate, and complete. While there were no significant limitations on the reliability and accuracy of the information, we experienced numerous problems with interfacing the information into one usable format for our analysis due to the differing formats used in Interior's data bases. (See app. III.)

Analysis of data

We used two levels of analysis to form the conclusions and recommendations in this report. First, we used a statistical technique known as regression analysis which involves finding and predicting the association among related variables and measuring the strength of the association and its nature (positive or negative). Because numerous variables, other than the bidding system, can affect industry's OCS bidding activities, regression analysis was an appropriate analytic method to isolate the effects of these variables in order to measure the impacts of each alternative system on industry bidding behavior independent of other factors. Regression analysis was also particularly appropriate for isolating and measuring the effects of each alternative system compared with the traditional system because:

--The data base was quite large and included the 1,618 tracts leased. Such a large universe of data made estimates of the effects derived by our regression analysis highly reliable.

--The data included many tracts leased under the traditional and alternative systems. Under these circumstances, our regression analysis provided direct and unambiguous measures of the effects caused by each alternative system.

Using regression analysis techniques, we identified the impacts of each alternative system on the number of companies placing bids (company participation), the number of bids per tract (sale competition), and the amount of bonuses received by the Government. Our regression analysis controlled the influences that (1) the geographic region of the sale, (2) the expected value of the tract, (3) the water depth of the tract, and (4) the price of oil at sale time had on the bidding results. By controlling the influences of these factors we were able to distinguish the effects of these factors from the effects of each alternative bidding system on participation, competition, and bonus bids. Thus, we were able to measure just the impacts of the bidding systems and to compare the bidding results for tracts leased under each alternative system to the bidding results for tracts leased under the traditional system.

The regression results are statistically significant at the 95-percent level or better and thus provide an accurate picture of the effects from using each of the alternative systems on company participation, sale competition, and bonus revenues. In other words, all regression results cited in this report have at least a 95-percent chance of being correct. (A detailed description of our regression techniques and results can be found in app. II.) However, our results are based on previous bidding and leasing experience from the 23 OCS test sales and the assumption that the economics of the offshore program will remain about the same in the future. Major changes in the program could affect the effectiveness of the alternative bidding systems in future lease sales. Also, while we were able to identify how the alternative systems compared with the results of the traditional system, a determination of the specific reasons why some systems were more effective than others was beyond the scope of this review.

Our second level of analysis involved identifying and reviewing historical trends in OCS leasing and development. This type of information was used when the universe was not large enough to use regression analysis or where the association among the variables in the trend data was not readily adaptable to such techniques. The trend data provides a historical perspective on what has occurred in the offshore program; however, it does not measure the association among the numerous variables that affect OCS bidding including the impacts under each alternative bidding system. Various trend tables are shown in appendix IV.

Additional review steps

We conducted our review at the Departments of the Interior and Energy in Washington, D.C., and at Interior field offices in New York, New York, and New Orleans, Louisiana. We interviewed officials at Interior, Energy, and eight oil companies judgmentally selected on the basis of their past participation in OCS lease sales.[4] We also reviewed budgetary records, examined bid and lease documents, and reviewed the various theories related to the alternative systems and their effect on OCS leasing and development. Although we did not obtain formal agency comments on a draft of this report, Interior Department officials were briefed on the results of our review and their comments have been incorporated in the report where appropriate. We also discussed our work with departmental internal auditors and with officials of other legislative organizations. No prior work had been done in the review area.

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[4]Specifically, we interviewed officials of (1) Conoco (Continental Oil), (2) Exxon, (3) Florida Exploration Co., (4) Gulf Oil, (5) Louisiana Land and Exploration Co., (6) McMoRan-Freeport Oil Co., (7) Shell Oil, and (8) Standard Oil Company of Indiana.

Chapter 2 discusses Interior's implementation of the alternative bidding systems. Chapters 3 through 7 examine the impact of the alternative systems on the level of company participation in OCS lease sales, the degree of competition for offshore leases, the amount of bonus bids and overall revenues to the Federal Government, the timing of exploration and production activities in OCS areas, and the costs of administering the OCS leasing program. Chapter 8 contains our conclusions and recommendations pertaining to the use of alternative systems.

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We conducted our review in accordance with generally accepted government auditing standards, but did not obtain, as requested, agency comments on this report. However, we did brief departmental officials on its contents--including our review methodology, our data sources, and our conclusions and recommendations. Agency officials indicated that they had no major problems with our analysis and review results.

CHAPTER 2

INTERIOR DEPARTMENT HAS INCREASED THE USE OF ALTERNATIVE BIDDING SYSTEMS

Prior to 1974, the traditional bonus bid, fixed 16-2/3 percent royalty rate system was used exclusively in leasing offshore lands. But in recent years, the Interior Department has increased the use of alternatives to the traditional system. Beginning with offshore lease Sale 36, held in 1974, alternative systems were used on a limited basis in six lease sales prior to the OCS Lands Act Amendments and in all 17 of the ensuing sales held through Janaury 1982. A total of 3,741 tracts were offered for lease in the 23 sales of which 40 percent were offered under alternative systems.

The Department of the Interior's approach in testing the alternative systems generally has been to use those systems which feature a cash bonus as the bid variable on which companies compete for leases. The Interior Department has used only one alternative system which features a non-cash bonus variable as the basis for awarding leases and has tested this system in only two lease sales--both of which were held prior to the 1978 amendments. Alternative systems that use variables other than the cash bonus as the basis for competition are perceived by the Interior Department as providing little incentive for lease exploration and production.

Both the Departments of Energy and the Interior are required by the OCS Lands Act, as amended, to report the results of using the alternative bidding systems to the Congress. While most of the reporting requirements are similar, there are some slight differences. Only the Department of Energy has complied, however, with the requirements. The Department of the Interior, although in the best position to determine the effectiveness of the alternative systems, has not issued a report discussing the results of using the alternative systems. The Department, however, is currently in the process of drafting a report due for issuance shortly.

ALTERNATIVE BIDDING SYSTEMS USED

In addition to the cash bonus bid, fixed 12-1/2 and 33-1/3 percent royalty alternatives,[1] the Interior Department also has used the following alternative systems in leasing offshore lands:

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[1]As stated in chapter 1, for the purposes of our analysis we considered the cash bonus bid, fixed 12-1/2 and 33-1/3 percent royalty arrangements as alternatives to the traditional cash bonus bid, fixed 16-2/3 percent royalty system.

--Royalty rate bid, fixed cash bonus system.

--Cash bonus bid, fixed net profit share system.

--Cash bonus bid, sliding scale royalty system.[2]

Interior has tested a number of variations in the design of the fixed net profit share system and six different royalty formulas for the sliding scale system. Explanations of the bidding systems that have been used follow.[3]

Cash bonus bid, fixed royalty rate

Under the cash bonus bid, fixed royalty rate system (the traditional system), companies submit cash bids for the amount of money (referred to as bonuses) they are willing to pay the Government for the right to develop the tract. The highest cash bid wins the lease with the winning company committed to pay the amount it bid. The royalty rate, fixed at a percentage of the value of oil and gas production, is paid to the Federal Government after the tract is in production.

Royalty rate bid, fixed cash bonus

Under the royalty rate bidding system, companies bid on the royalty rate that they will pay if the lease is productive while

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[2]For simplicity, the names of the bidding systems used have been shortened in this report from:

Cash bonus bid, fixed 16-2/3 percent royalty system to the traditional system.

Cash bonus bid, fixed 12-1/2 percent royalty system to the one-eighth royalty system.

Cash bonus bid, fixed 33-1/3 percent royalty system to the one-third royalty system.

Royalty rate bid, fixed cash bonus system to the royalty rate bidding system.

Cash bonus bid, fixed net profit share system to the fixed net profit share system.

Cash bonus bid, sliding scale royalty system to the sliding scale system.

[3]Appendix V provides a detailed discussion of all OCS bidding systems.

the cash bonus is fixed, generally at a nominal level. The highest royalty rate bid wins the lease and the nominal cash bonus is required by the winning company, as an initial investment, to obtain the lease.

Cash bonus bid, fixed net profit share

Under the fixed net profit share system, the cash bonus is the bid variable and a fixed share of the winning company's net profits from production is paid to the Government. Like all cash bonus bidding systems, the highest qualified cash bid for the tract wins the lease. However, the fixed net profit share system, unlike other systems, makes allowances for the expense the company incurs in developing the lease. This differs significantly from a royalty system, where contingency payments to the Government from royalties begin with the first barrel produced. The fixed net profit share system, in theory, makes it possible for lessees to develop reservoirs of marginal commercial value and makes premature abandonment of leases less likely. For example, a company is allowed to recover its capital investment, based on a capital recovery factor, and then shares the lease's net profit (oil and gas revenue less operating expense) with the Government. Interior has offered tracts under this leasing arrangement using capital recovery factors ranging from 0.25 to 1.50 and profit share rates of 30 to 50 percent.

Cash bonus bid, sliding scale royalty

The sliding scale system differs from the cash bonus bid with a fixed royalty by establishing a royalty rate that increases or decreases with the value of production over a 3-month period. Larger discoveries with higher production rates result in higher royalty rates. Interior has used six formulas for setting the rate at which the royalty will increase or decrease. The impacts of these different formulas are shown on page 10.

	Lowest royalty rate (percent)	Quarterly production value at which the royalty rate begins to increase ($ million)	Highest royalty rate (percent)	Quarterly production value at which the royalty rate tops out ($ million)
Formula 1	16-2/3	$ 1.50	50	$ 34.83
Formula 2	16-2/3	13.24	65	1,662.85
Formula 3	16-2/3	15.93	65	3,423.82
Formula 4	16-2/3	10.81	65	445.24
Formula 5	16-2/3	22.30	65	4,793.35
Formula 6	16-2/3	14.79	65	1,197.21

RELIANCE ON CASH BONUS BIDDING ALTERNATIVES

The Department of Energy under authority provided by section 302(b) of the Department of Energy Organization Act (Public Law 95-91), has issued regulations for the traditional system as well as all the alternative systems authorized under the OCS Lands Act, as amended. But, although regulations have been promulgated, the Interior Department's approach in using alternative systems has been to rely almost exclusively on those systems which feature the cash bonus as the bid variable. Only one of the two alternative systems which feature the share of production or profits from production as the bid variable has been used to lease offshore tracts--the royalty rate bidding system. This system has been tested sparingly--in one 1974 sale and in one 1977 sale. Only 56 of the 1,491 tracts offered under alternative systems have been offered under the royalty rate bidding system. The net profit share bid, fixed cash bonus system is the other alternative available that features the share of the downstream benefits from production as the bid variable. It has not been used by Interior.

In addition to the net profit share bid, fixed cash bonus system, Interior has not used two other alternative systems available under the OCS Land Act Amendments--(1) cash bonus bid, fixed royalty rate and fixed net profit share system and (2) work commitment bid, fixed cash bonus and royalty rate system.[4] None

[4]See page 97 for a discussion of the work commitment bidding system.

of the three systems will be used, according to Interior documents, because the expected disadvantages of these alternatives--discussed below--do not justify the possible benefits.

The Department of Energy reported that it agrees with Interior's decision not to use the untested alternative systems, and not to further test the royalty rate bidding system. Generally, Energy's agreement with Interior is based on its belief that these systems would impact negatively on orderly and efficient lease exploration and production, the national income, and Government revenues. Similarly, Energy reported that the use of the royalty rate bidding system leads to overbidding of the royalty rate, which may result in inefficient resource development, and to speculation on tracts offered for lease under this system. The Department of Energy concluded that the negative impacts of these alternative systems outweigh any marginal increase anticipated in company participation and competition for OCS leases offered under the systems.

Interior's non-use of certain bidding systems has been challenged in the courts. Nine consumer groups, two State governmental entities, and three private citizens sued the United States and the Secretaries of the Interior and Energy alleging that the Secretaries abused their discretion by failing to experiment with bidding systems that do not use a cash bonus as the bid variable. The U.S. Supreme Court, on December 1, 1981, ruled that while the OCS Lands Act, as amended, required experimentation with at least some of the alternative systems, the statute left it to the Secretary of the Interior's discretion to choose which systems to test.

Authority to use additional bidding systems

Section 8(a)(1)(H) of the OCS Lands Act, as amended, allows the Secretary of the Interior the discretion to use any other bidding system he determines to be useful, except that no system should have more than one bid variable. The Secretary, however, has tested only those alternative systems specifically identified in the OCS Lands Act, as amended. As a result, the extent to which additional bidding systems can enhance the offshore program is difficult to measure. Many factors which are presently unknown, such as future oil and gas prices, production needs, general economic conditions, and current changes in the leasing program suggest that Interior should maintain a flexible approach in selecting bidding systems for future sales. Under the new accelerated leasing program, approved in July 1982, (1) Interior will be offering more land for lease, but with less pre-sale information; (2) industry will be extending its financial resources over more sales and tracts than in the past, presumably with a lesser amount of financial resources per tract; and (3) industry may be offered second sales in leasing areas before it has information from prior sales to define its

interest. New variations and bidding systems that do not use a cash bonus as the bid variable may prove to be advantageous to the Government under a number of varying economic conditions or leasing situations.

RECORD OF TESTING

The use of bidding systems other than the traditional system began with OCS Sale 36 in the central Gulf of Mexico in 1974. In Sale 36, 10 of the 297 tracts offered for lease were offered under the royalty rate bidding system. Beginning with Sale 36, alternatives to the traditional system were used on a limited basis in six offshore sales prior to the OCS Lands Act Amendments and in all 17 of the ensuing OCS lease sales held through January 1982. A total of 3,741 tracts were offered for lease in the 23 sales, as shown in table 1, of which 60 percent was offered under the traditional system. The remaining 40 percent was offered under the alternative systems. Of the tracts offered, 1,618 tracts were leased--995 tracts under the traditional system and 623 tracts under the alternative systems. Appendix VI lists the 23 test sales by alternative bidding system.

Table 1

Comparative Statistics of Tract Offerings in the 23 Test Sales by Bidding System

Bidding system	Number of tracts offered	Tracts bid on		Tracts leased	
		Number	Percent	Number	Percent
Royalty rate bidding	56	38	68	38	68
One-eighth royalty	251	95	38	56	22
One-third royalty	67	58	87	41	61
Fixed net profit share	467	198	42	166	36
Sliding scale:					
Formula 1	96	50	52	41	43
Formula 2	304	172	57	163	54
Formula 3	113	64	57	58	51
Formula 4	69	50	72	38	55
Formula 5	32	3	9	3	9
Formula 6	36	22	61	19	53
Total of all alternative systems	1,491	750	50	623	42
Traditional system	2,250	1,096	49	995	44
TOTAL	3,741	1,846	49	1,618	43

Source: Table is based on Interior Department and GAO data.

REPORTING REQUIREMENTS

Both the Departments of Energy and the Interior are required by the OCS Lands Act, as amended, to annually report the results of using alternative bidding systems to the Congress. Section 8(a)(9) of the OCS Lands Act, as amended, requires tne Secretary of Energy to issue a report within 6 months after the end of each fiscal year. The report should include the

--schedule of all lease sales held during the fiscal year and the bidding systems used;

--schedule of all lease sales to be held in the following fiscal year and the bidding systems to be used;

--benefits and costs associated with using the various bidding systems;

--reasons, if applicable, why particular bidding systems have not been or will not be utilized; and

--reasons, if applicable, why more than 60 percent or less than 20 percent of the area was offered for lease under alternative bidding systems.

Similarly, section 15(2) of the OCS Lands Act, as amended, requires that the Secretary of the Interior, after consultation with the Attorney General, annually submit a report to the Congress on competition in leasing OCS lands. The report is to include recommendations for promoting competition and plans for implementing the report recommendations. Furthermore, the report should contain evaluations of the

--alternative bidding systems used in OCS leasing and, if applicable, the reasons why a particular bidding system has not been used;

--bidding systems not provided by the 1978 amendments and why such systems should or should not be used;

--restrictions on joint bidding by large companies;

--measures to encourage entry of new competitors in OCS lease sales; and

--measures dealing with supplies of oil and gas to independent refiners and distributors.

Although these reporting requirements are similar for both the Departments of Energy and the Interior, there are some differences. For example, Energy's annual report should discuss the overall use of the various bidding systems for leasing OCS

lands and should include both factual and analytical data. The OCS Lands Act Amendments' conference report describes section 8 (a)(9) as requiring the Secretary of Energy to (1) obtain the factual data from the Secretary of the Interior and (2) undertake his own analysis and evaluation of the alternative bidding systems. An evaluation of the alternative systems, however, is only one requirement for Interior's annual report. Interior's report is to focus more on areas for promoting competition in leasing OCS lands and is to include recommendations to promote competition and to encourage entry of new competitors in OCS lease sales. The report is also required to contain an evaluation of bidding systems not specifically authorized by the 1978 amendments, which is not a requirement for Energy's report.

The Secretary of Energy has issued four annual reports to the Congress on the various bidding systems used in leasing OCS lands. The latest report, dated March 1982, provided analysis of the alternative systems tested in fiscal year 1981. The Secretary concluded that the fixed net profit share system and sliding scale system did not appear to have achieved Congress' intent to increase company participation and competition in OCS lease sales. The Secretary also reported that the data available for fiscal year 1981 sales was not sufficient to evaluate whether other congressional objectives were being achieved by using these systems.

In contrast, Interior officials told us that the Interior Department, relying on Energy's reports, has never issued a report to the Congress discussing the best methods for promoting competition and the effectiveness of using the alternative bidding systems. Interior officials stated that since most the reporting requirements were similar, the Interior Department would not have provided any additional information over what was in Energy's reports. Still, there have been drafts of the required report, according to Interior officials, but none has been placed in final form for issuance to the Congress. The Interior Department is currently in the process of drafting another report due for issuance shortly.

CHAPTER 3

COMPANY PARTICIPATION UNDER MOST ALTERNATIVE SYSTEMS HAS PARALLELED OR BETTERED THE TRADITIONAL SYSTEM

The level of participation on tracts offered for lease under most of the alternative bidding systems has been similar to or better than the level of participation for tracts under the traditional system. Specifically, three of the alternative systems have generated more participation than the traditional system, two systems have resulted in less participation, and five alternative systems have promoted similar levels of participation to the traditional system. It is also important to note that the effectiveness of the alternative systems in promoting more companies to participate in OCS lease sales has varied depending on the nature and location of the sale area.

The impacts of using the alternative systems have also varied among companies depending on their size and experience in OCS lease sales. In terms of small companies, overall participation under the alternative systems has been less than that under the traditional system--as has the resulting lease ownership rate. Small companies bidding for the first time in OCS lease sales have also participated less on tracts offered for lease under the alternative systems than under the traditional system. Large companies, on the other hand, have participated similarly on most bidding systems.

INCREASING PARTICIPATION IS A MAJOR OBJECTIVE

One major objective for testing the alternative systems is to determine whether they permit more companies to participate in OCS lease sales. For our report, company participation is defined as the number of companies placing bids in OCS lease sales and does not take into consideration the number of bids submitted or whether the bids were single ventures or joint ventures with another company. Some industry analysts perceive that large cash bonuses, generated by the traditional system, prevent some small companies from participating in offshore leasing and development. Large initial cash outlays are assumed to be beyond the financial capabilities of these companies. Larger royalties and profit shares, specified by the alternative systems, should theoretically reduce the initial financial burden of obtaining OCS leases, thus permitting additional companies to participate in offshore lease sales.

COMPANY PARTICIPATION HAS FLUCTUATED IN RECENT YEARS

Over the 8-year period from 1974 through 1981, an average of about 105 companies annually participated, by bidding for tracts, in offshore lease sales. (See table 2.) However, participation in OCS leasing has fluctuated from year to year. For example, from 1974 through 1976, the average annual participation was 110 companies. Participation then declined to 87 companies in 1977 and increased slightly to 98 companies in 1978. The level of participation again increased and peaked at 117 companies in 1979. In the 2 most recent years covered in our review (1980 and 1981) 101 and 104 companies, respectively, participated in the offshore leasing program.

Table 2

Companies Participating in Offshore Lease Sales from 1974 Through 1981

Calendar year	Companies	Companies by region (note a)			
		Gulf of Mexico	Pacific	Alaska	Atlantic
1974	116	116	N/A	N/A	N/A
1975	113	95	40	N/A	N/A
1976	102	84	N/A	39	51
1977	87	80	N/A	31	N/A
1978	98	98	N/A	N/A	11
1979	117	102	28	20	33
1980	101	101	N/A	9	N/A
1981	104	96	43	2	23

a/N/A indicates that no sales were held in this region during the calendar year.

Most companies participating in OCS lease sales win leases, whether bidding alone or jointly with other companies. We found that at least 80 percent of all companies participating in OCS sales during the last 5 years won at least one lease. However, this does not take into consideration the number of bids these companies had to submit to obtain a lease. Conceivably, some companies may have won leases by submitting one bid, while others may have submitted numerous bids before winning a lease.

ALTERNATIVE SYSTEMS THAT GENERATED MORE PARTICIPATION

Our regression analysis on the total level of company participation in the 23 test sales, i.e., combined participation of both small and large companies, indicated that three alternative systems generated significantly more participation in lease sales

than the traditional system. Our analysis showed that the one-third royalty system generated the highest level of company participation. Sliding scale formula 4 and 6 systems also resulted in more participation than the traditional system. In contrast, the fixed net profit share system and the sliding scale formula 1 system generated significantly less company participation than the traditional system. The remaining alternative systems, as shown in table 3, promoted similar levels of participation to the traditional system.

Table 3

Impact of Alternative Bidding Systems on the Level of Company Participation Compared to the Traditional System

Bidding system	Impact on the level of participation	Impact on participation by region (note a)			
		Gulf of Mexico	Pacific	Alaska	Atlantic
Royalty rate bidding	Similar	Similar	N/A	Increased	N/A
One-eighth royalty	Similar	N/A	N/A	N/A	Similar
One-third royalty	Increased	Increased	Similar	N/A	Increased
Fixed net profit share	Decreased	Decreased	N/A	Decreased	Similar
Sliding scale:					
Formula 1	Decreased	Decreased	N/A	N/A	Decreased
Formula 2	Similar	Increased	Decreased	Similar	N/A
Formula 3	Similar	N/A	N/A	N/A	Similar
Formula 4	Increased	Increased	N/A	N/A	N/A
Formula 5	Similar	N/A	N/A	Similar	N/A
Formula 6	Increased	N/A	Increased	N/A	N/A

a/N/A indicates that the bidding system was not used in the region.

It is important to note that the impacts of the alternative bidding systems in comparison to the traditional system do not track evenly in all OCS regions or leasing situations. For example, as shown in table 3, the royalty rate bidding system generated levels of participation similar to the traditional system overall and in the Gulf of Mexico. However, this system bettered the results of the traditional system in Alaska. In summary, while a system can do extremely well in some situations, it may not provide the same participation results in a similar leasing situation in another region.

The overall level of company participation was also sensitive to the projected value of the tract and to the water depth where the tract is located. As would be expected, high-valued tracts (tracts valued at more than $250 per acre) received statistically more participation in terms of the total number of companies submitting bids than low-valued tracts (tracts valued at less than or equal to $250 per acre). Our regression analysis also showed that deep water tracts (tracts located in water deeper than 200 meters) received statistically less company participation than shallow water tracts (tracts located in water less than or equal to 200 meters deep).

SMALL COMPANY PARTICIPATION UNDER ALTERNATIVE SYSTEMS

Trend data indicates that small companies tended to participate less on tracts offered for lease under the alternative systems compared with the traditional system. Of the 202 small companies placing bids in the 23 test sales, 23 small companies, about 11 percent of the total 202, bid exclusively on alternative tracts, while 58 small companies, about 29 percent, avoided the alternative tracts altogether. The remaining 121 companies placed

bids on tracts offered under both alternative and traditional systems. (See table 4.) Viewed from another perspective, 179 companies (the 121 that placed bids both ways plus the 58 that bid exclusively on traditional tracts) offered bids on tracts under the traditional system, while 144 companies (the 121 plus the 23 that placed bids exclusively on alternative tracts) offered bids on tracts under the alternative systems.

Table 4

Small Companies Participating in the 23 Test Sales

	Total small companies (note a)	Number of small companies by region			
		Gulf of Mexico	Pacific	Alaska	Atlantic
Small companies using both systems	121	98	27	12	31
Small companies using only the traditional system	58	48	21	3	6
Small companies using only the alternative systems	23	17	2	9	6
TOTAL	202	163	50	24	43

a/The total of all small companies will not equal the sum of small companies by region because some placed bids in more than one region.

Although more small companies tended to favor the traditional system in general, the results of our regression analysis indicated that three of the alternative systems--(1) royalty rate bidding system, (2) one-third royalty system, and (3) sliding scale formula 4 system--generated more participation from small

companies than the traditional system. (See table 5.) On the other hand, three alternative systems--(1) one-eighth royalty system, (2) fixed net profit share system, and (3) sliding scale formula 1 system--generated less participation than the traditional system. The remaining four alternative systems generated levels of participation from small companies similar to the traditional system.

Table 5

Impact of Alternative Bidding Systems on the Level of Small Company Participation Compared to the Traditional System

Bidding system	Impact on the level of participation by small companies
Royalty rate bidding	Increased
One-eighth royalty	Decreased
One-third royalty	Increased
Fixed net profit share	Decreased
Sliding scale:	
Formula 1	Decreased
Formula 2	Similar
Formula 3	Similar
Formula 4	Increased
Formula 5	Similar
Formula 6	Similar

Number of tracts leased to small companies

Based on general trends in the number of tracts leased to small companies, small companies gained ownership in about 52 percent of the tracts leased under the traditional system and

about 40 percent of the tracts leased under the alternative systems. However, as shown in table 6, small companies gained ownership in more than 60 percent of the tracts leased under five of the alternative systems which bettered the results of the traditional system. For our analysis, we defined "gained ownership" as those tracts in which a small company had all or any portion of the ownership, as stated in the bid document. Thus, if one small company participated in the winning bid, that company was considered as having ownership in the tract although its percent of ownership may have been small.

Table 6

Tracts Leased to Small Companies in the 23 Test Sales by Bidding System

Bidding system	Number of tracts leased to All companies	Number of tracts leased to Small companies	Percent of tracts leased to small companies
Traditional	995	521	52
All alternatives:	623	247	40
Royalty rate bidding (note a)	38	26	68
One-eighth royalty	56	3	5
One-third royalty a/	41	26	63
Fixed net profit share	166	35	21
Sliding scale:			
Formula 1	41	7	17
Formula 2	163	75	46
Formula 3 a/	58	37	64
Formula 4 a/	38	28	74
Formula 5 a/	3	2	67
Formula 6	19	8	42
For all systems	1,618	768	47

a/Small companies gained ownership in over 60 percent of the tracts leased under these systems and also exceeded the results of the traditional system.

Percentage of lease ownership by small companies

Trends in the percentage of lease ownership showed that small companies obtained only 28-percent ownership of the tracts leased during the 23 test sales. (See table 7.) In other words, the 21 large companies, listed in chapter 1, obtained ownership control of 72 percent in the total 1,618 tracts leased. In addition, small companies obtained only a 59 percent ownership share of the 768 tracts leased to them. The remaining 41 percent is owned by large companies. The percentage of lease ownership is based on the proportionate interest, as stated on the bid document, of each participating bidder gaining ownership of the lease.

Table 7

Lease Ownership by Small Companies in the 23 Test Sales by Bidding System

Bidding system	Percentage of small company ownership of the 768 tracts leased to small companies	Percent of small company ownership of the total 1,618 tracts
Traditional	61	32
All alternatives:	55	22
Royalty rate bidding (note a)	83	57
One-eighth royalty	56	3
One-third royalty	31	20
Fixed net profit share a/	66	14
Sliding scale:		
Formula 1	59	10
Formula 2	57	26
Formula 3	42	27
Formula 4 a/	57	42
Formula 5	38	25
Formula 6	57	24
For all systems	59	28

a/Exceeded the results of the traditional system at least once.

Also of interest, table 7 indicates that small companies tended to obtain a larger percentage of ownership in tracts leased under the traditional system than in tracts leased under the alternative systems. For example, small companies obtained 32 percent of the ownership in all the traditionally leased tracts and only 22 percent ownership of the alternative tracts. However, the royalty rate bidding system and the sliding scale formula 4 system resulted in lease ownership rates for small companies of 57 and 42 percent, respectively, and bettered the results of the traditional system. Trends in the percentage of ownership in just the 768 tracts leased to small companies showed that small companies held 61 percent of the ownership in the traditional leases and 55-percent ownership in the alternative leases. However, tracts leased under the royalty rate bidding and fixed net profit share systems resulted in ownership rates of 83 and 66 percent, respectively, for small companies. Small company ownership of leases under the remaining alternative systems was less than their share of traditionally leased tracts.

The trend data presented in table 7, however, does not take into account lease reassignments and ownership transfers that exist after the Government's OCS lease sale. A contract study issued for the Energy Department reported that two-thirds of all companies owning offshore leases participated in lease transfers after sale and that, on average, 4 percent of all unrelinquished leases changed ownership annually.

PARTICIPATION BY NEW BIDDERS UNDER ALTERNATIVE SYSTEMS

Based on general trends in the number of small companies bidding for the first time in OCS lease sales, these companies tended to participate less on tracts offered under the alternative systems than on tracts offered under the traditional system.[1] As

[1]All companies bidding for the first time since 1978 were small companies.

shown in table 8, only 10 of the 77 companies bidding the first time since 1978--the first major year for testing the alternative systems--participated exclusively on alternative tracts, compared to 32 of the companies which participated exclusively on traditional tracts. Thirty-five companies placed bids on both alternative and traditional tracts.

Table 8

New Bidders Since 1978

	Total new bidders (note a)	New bidders by region			
		Gulf of Mexico	Pacific	Alaska	Atlantic
New bidders using both systems	35	29	9	0	1
New bidders using only the traditional system	32	30	4	0	3
New bidders using only the alternative systems	10	5	0	5	3
TOTAL	77	64	13	5	7

a/The total of new bidders will not equal the sum of new bidders by region, because some bidders participated in more than one region and were accounted for accordingly.

The fixed net profit share system and sliding scale formula 2 system generated the most interest from new bidders and approximately half of the new bidders using these systems were able to win leases. Twenty-three companies placed bids on tracts offered under the fixed net profit share system (12 won leases), and 21 companies placed bids on the sliding scale formula 2 system (13 won leases). In contrast, the sliding scale formula 5 system

received no interest from these companies, as shown in table 9, while the remaining systems received levels of participation between these extremes.

Table 9

New Bidders by Alternative Bidding System

Bidding System	Total new bidders	New bidders winning leases
Royalty rate bidding (note a)	N/A	N/A
One-eighth royalty	2	2
One-third royalty	13	5
Fixed net profit share	23	12
Sliding scale:		
Formula 1	3	1
Formula 2	21	13
Formula 3	3	2
Formula 4	17	12
Formula 5	0	N/A
Formula 6	9	4

a/The royalty rate bidding system was used before 1978 and, thus, was not included in our analysis on new bidders.

LARGE COMPANY PARTICIPATION UNDER ALTERNATIVE SYSTEMS

Our regression analysis showed that large companies participated about the same on most bidding systems. Only the one-third royalty and sliding scale formula 4 and 6 systems had any effect on the level of large company participation compared to the traditional system. Our regression analysis indicated that approximately one more large company participated on tracts offered under these systems than under the traditional system. The remaining alternative systems resulted in no statistical difference in the number of large companies participating when compared to the results of the traditional system.

CHAPTER 4

COMPETITION UNDER MOST ALTERNATIVE SYSTEMS HAS PARALLELED OR BETTERED THE TRADITIONAL SYSTEM

The overall level of competition for tracts offered for lease under all but one alternative bidding system has paralleled or bettered the level of competition for tracts offered under the traditional system. For example, four of the alternative systems have generated statistically more competition, in terms of bids per tract, than the traditional system; one alternative resulted in less competition; and five systems generated similar levels of competition. However, the effectiveness of these systems has varied depending on the geographic region of the sale. We also noted that a higher percentage of tracts offered for lease under seven of the alternative systems received bids compared with the percentage of tracts receiving bids under the traditional system.

The alternative bidding systems tended to promote more competition from large companies than from small companies. Large companies, for example, bid on more tracts and submit more bids per tract under the alternative systems than the traditional system. Small companies, however, tended to bid on a higher percentage of tracts offered for lease under the traditional system than the alternative systems.

Based on trends in the number of bids per tract and the percentage of the tracts receiving bids, competition in the Gulf of Mexico, for example, was greater under the alternative systems for all groups of tracts, aggregated by tract value and water depth, than under the traditional system. In contrast, the degree of competition in the other three OCS regions has varied, providing few consistent trends in competition.

INCREASING COMPETITION IS A MAJOR OBJECTIVE

A major reason for testing the alternative systems is to determine whether they would increase competition for OCS leases. The traditional system is perceived as limiting competition because the large cash bonuses (some bids amount to hundreds of millions of dollars) required to obtain a tract limit the number of tracts a company can bid on. On the other hand, the alternative systems are perceived as promoting competition because their higher contingency rates on production, i.e., higher royalties or profit shares, should result in relatively lower bonus bids. In theory, the lowering of the initial cash outlay should encourage companies, both small and large, to bid on more tracts.

COMPETITION HAS VARIED IN RECENT YEARS

Competition, in terms of the number of bids per tract (for tracts that received bids), has averaged between 2.2 and 3.2 bids per tract each year since 1974. As shown in table 10, there appears to be no consistent trend in the number of bids for offshore leases either on a yearly or regional basis.

Table 10

Average Number of Bids per Tract from 1974 Through 1981 (note a)

Calendar year	Number of tracts offered	Average bids per tract for all sales	Number of bids per tract by regions (note b)			
			Gulf of Mexico	Pacific	Alaska	Atlantic
1974	1,006	2.7	2.7	N/A	N/A	N/A
1975	1,374	2.2	2.0	2.4	N/A	N/A
1976	536	3.1	2.2	N/A	3.0	4.1
1977	358	2.7	2.8	N/A	2.6	N/A
1978	586	2.6	2.8	N/A	N/A	1.7
1979	666	3.0	3.5	2.0	2.5	2.2
1980	483	3.2	3.5	N/A	1.7	N/A
1981	1,223	2.7	2.4	3.7	1.2	2.4

a/Table is based only on tracts receiving bids.

b/N/A indicates that no sales were held in this region during the calendar year.

MORE COMPETITION UNDER FOUR ALTERNATIVE SYSTEMS

Overall competition has been similar or greater for tracts offered under most of the alternative bidding systems than the traditional system. Our regression analysis on the number of bids per tract, the results of which are shown in table 11, indicated that four of the alternative systems generated more bids than the traditional system. In addition to the one-third royalty system, which statistically generated the greatest number of bids per tract, the royalty rate bidding system and the sliding scale formula 4 and 6 systems generated statistically more bids per tract than the traditional system. The effectiveness of these systems, however, varied somewhat in each of the major OCS regions. The fixed net profit share system resulted in significantly fewer bids per tract, overall, than the traditional system. However, this system generated a similar number of bids to the traditional system in Alaska and more bids per tract in the Atlantic. The five remaining alternative systems generated a

similar number of bids per tract compared with the results of the traditional system.

Table 11

Impact of Alternative Bidding Systems on the Number of Bids per Tract Compared to the Traditional System

Bidding system	Impact on bids for all sales	Impact on bids by region (note a)			
		Gulf of Mexico	Pacific	Alaska	Atlantic
Royalty rate bidding	Increased	Increased	N/A	Increased	N/A
One-eighth royalty	Similar	N/A	N/A	N/A	Similar
One-third royalty	Increased	Increased	Similar	N/A	Increased
Fixed net profit share	Decreased	Decreased	N/A	Similar	Increased
Sliding scale:					
Formula 1	Similar	Similar	N/A	N/A	Decreased
Formula 2	Similar	Increased	Decreased	Similar	N/A
Formula 3	Similar	N/A	N/A	N/A	Similar
Formula 4	Increased	Increased	N/A	N/A	N/A
Formula 5	Similar	N/A	N/A	Similar	N/A
Formula 6	Increased	N/A	Increased	N/A	N/A

a/N/A indicates that the bidding system was not used in the region.

General trend data indicated that seven of the alternative systems, as shown in table 12, also bettered the traditional system in terms of the percentage of tracts offered receiving bids. The one-third royalty rate system received the highest percentage of tracts bid upon--87 percent.

Table 12

Percentage of Tracts Receiving Bids in the 23 Test Sales by Bidding System

Bidding system	Number of tracts offered	Percent of tracts receiving bids for all sales	Percent of tracts receiving bids by region (note a)			
			Gulf of Mexico	Pacific	Alaska	Atlantic
			Percentage			
Traditional	2,250	49	64	38	29	31
Royalty rate bidding (note b)	56	68	80	N/A	65	N/A
One-eighth royalty	251	38	N/A	N/A	N/A	38
One-third royalty b/	67	87	79	95	N/A	100
Fixed net profit share	467	42	77	N/A	18	32
Sliding scale:						
Formula 1 b/	96	52	63	N/A	N/A	50
Formula 2 b/	304	57	64	39	54	N/A
Formula 3 b/	113	57	N/A	N/A	N/A	57
Formula 4 b/	69	72	72	N/A	N/A	N/A
Formula 5	32	9	N/A	N/A	9	N/A
Formula 6 b/	36	61	N/A	61	N/A	N/A

a/N/A indicates that the bidding system was not used in the region.

b/Exceeded the results of the traditional system.

MORE COMPETITION FROM LARGER COMPANIES ON ALTERNATIVE TRACTS

The alternative systems, based on general trend data, promoted more competition from large companies than from small companies, in that large companies bid on a higher percentage of the tracts offered under the alternative systems than tracts offered under the traditional system. Small companies bid on the more traditional tracts. However, as shown in table 13, the average number of bids per tract from large companies on alternative tracts (2.4 bids per tract) was only slightly higher than the average number of bids on traditional tracts (2.3 bids per tract). The average number of bids from small companies was the same for tracts offered under both systems (2.2 bids per tract). It thus appears that large companies tend to bid on more tracts and more often--no matter what bidding system is used--than small companies.

Table 13

Competition from Large and Small Companies (note a)

	Percent of tracts receiving bids from		Average number of bids per tract from	
	Large companies	Small companies	Large companies	Small companies
Traditional tracts	42	37	2.3	2.2
Alternative tracts	47	31	2.4	2.2

a/The percent of tracts bid on does not directly relate to tracts leased, as shown in chapter 3.

OTHER GENERAL OBSERVATIONS ON COMPETITION

As expected, we found that more bids were received for tracts with a high pre-sale value and for tracts located in shallow water than for tracts with a low value or in deep water. The number of bids received for each tract also varied among the different OCS regions.

Based on general trend data, the use of alternative bidding systems on both high- and low-valued tracts resulted in about the same amount of competition as that received for similar tracts offered under the traditional system. However, competition varied among OCS regions, as shown in table 14, with the more visible differences being on high-valued tracts. Competition for higher valued tracts offered under the alternative systems was slightly greater in the Gulf of Mexico, while competition in the other

three regions was greater for tracts offered under the traditional system. For low-valued tracts, there are no major differences in the general trends in the percent of tracts receiving bids or the average number of bids between bidding systems.

Table 14

Percent of Tracts Receiving Bids and the Average Number of Bids Per Tract by Tract Value Groups (note a)

Region	Tracts equal to or less than $250 per acre		Tracts greater than $250 per acre	
	Traditional	Alternative	Traditional	Alternative
All regions				
Percent bid on	43	43	69	75
Average no. of bids	2.3	2.4	3.9	3.7
Gulf of Mexico				
Percent bid on	60	69	73	75
Average no. of bids	2.4	2.8	3.6	4.0
Pacific				
Percent bid on	32	43	71	96
Average no. of bids	2.1	2.1	4.6	3.9
Alaska				
Percent bid on	27	27	82	85
Average no. of bids	1.9	2.4	4.3	2.7
Atlantic				
Percent bid on	30	33	37	71
Average no. of bids	2.2	1.9	6.0	3.5

a/Table is based on the results of the 23 test sales.

Trend data indicated that alternative systems tend to increase the percent of tracts bid on and generate about the same number of bids as the traditional system in most shallow and deep water groups. However, as shown in table 15, the alternative systems tend to be most effective in increasing competition for tracts located in water deeper than 200 meters.

Table 15

Percent of Tracts Receiving Bids and the Average Number of Bids Per Tract by Water Depth Groups (note a)

Region	Tracts in water less than or equal to 200 meters		Tracts in water greater than 200 meters	
	Traditional	Alternative	Traditional	Alternative
All regions				
Percent bid on	50	51	39	50
Average no. of bids	2.8	3.1	2.3	2.4
Gulf of Mexico				
Percent bid on	66	69	23	82
Average no. of bids	2.8	3.3	2.0	2.5
Pacific				
Percent bid on	23	59	46	51
Average no. of bids	4.5	3.8	2.4	2.2
Alaska				
Percent bid on	29	32	-	17
Average no. of bids	2.1	2.5	-	1.0
Atlantic				
Percent bid on	32	39	23	45
Average no. of bids	2.8	2.9	1.4	2.4

a/Table is based on the results of the 23 test sales.

CHAPTER 5

SIMILAR BONUS REVENUES FROM A MAJORITY OF THE ALTERNATIVE SYSTEMS

Bonuses to the Government from tracts leased under most alternative bidding systems have paralleled bonuses received from traditionally leased tracts. However, as with company participation and competition, different alternative systems have provided differing results. For example, three of the alternative systems generated substantially less bonuses than the traditional system, while one alternative system resulted in larger bonuses. The remaining six alternative systems generated similar bonuses to the traditional system.

These results tend to run counter to the expected impacts of alternative bidding systems on bonus levels. Conceptually, the alternative systems, by establishing a larger Government share of the royalties or profits from any follow-on production, should reduce the amount of up-front bonus money required to obtain a lease. However, this did not happen for most of the alternative systems used. The reason for this unexpected outcome is not clear.

Bonuses from leasing offshore lands, however, represent only one revenue-related aspect of using the alternative systems. As noted above, the alternative systems are supposed to reduce the amount of money--bonuses--required to obtain a lease but, in return, require that the Government be paid a larger share of the royalties or profits from production, should production occur. However, production has occurred on too few tracts leased under the alternative systems to estimate their impact on royalties or profit shares. Thus, the total revenue effects of using alternative systems cannot be determined at this time.

ALTERNATIVE SYSTEMS ARE SUPPOSED TO REDUCE BONUSES AND FINANCIAL BARRIERS

The legislative history of the OCS Lands Act Amendments indicates that the Congress sought to test the effectiveness of alternative systems in achieving certain revenue-related objectives. One of these objectives was to determine whether alternative systems would promote the sharing of the economic risks of offshore development more evenly between the Government and industry through the reduction of up-front capital to acquire offshore leases. Large bonus bids generated under the traditional system were perceived to be beyond the financial capabilities of some oil companies, thus creating financial barriers for these companies in obtaining offshore leases. The alternative systems, in theory, were supposed to reduce this initial financial burden, in the form

of bonuses, and permit more companies to participate and compete in OCS lease sales. For example, it was felt that the level of contingency payments (royalties, profit shares, etc. on production) should conversely affect the size of the bonus bid, that is, low contingency payment rates should prompt higher bonuses, and large contingency rates should result in lower bonuses.

Since the traditional system uses a relatively low contingency payment rate, bonuses under this system should be higher than those under the alternative systems. However, one should remember that as competition tends to increase, bidders are also more likely to pay more for a lease than when competition is less. Thus the anticipated impact of reduced bonus levels under the alternative systems may be offset by higher bonuses brought about by increased competition.

Another major goal of the offshore leasing program, as stated in the 1978 amendments, is to ensure that the Government receives a fair and equitable monetary return from the leasing of OCS lands. Thus, one of the more important issues to the Government is which bidding system generates a fair return to the Government from leasing offshore lands. The oil industry maintains that the Government has reaped the lion's share of the monetary value of oil and gas produced offshore to date. For example, a 1977 industry study reported that the rate of return to industry from its leasing activities in the Gulf of Mexico is about 29 percent before taxes and only 7 percent after taxes. The Government receives most of the remaining revenues. On the other hand, some consumer organizations maintain that the Federal Government has not received a fair return from OCS activities because the traditional system used in the past stifles competition. These organizations cite theoretical analysis suggesting that as competition increases, the amount of the winning bid increases and more closely approximates the economic value of the lease. In addition, emphasis on bonus bids under the traditional system, combined with a low royalty rate, precludes the Government from obtaining the full economic benefits of unanticipated large oil or gas discoveries. Organizations following this latter line of thinking generally favor alternative systems which place emphasis on larger Government shares of the economic benefits of future discoveries.

SUBSTANTIAL REVENUES TO THE GOVERNMENT

Historically, the offshore program has generated substantial revenues to the Government. These revenues are comprised of bonus bids, royalty payments from oil and gas production, and rent that

companies pay for land under lease. Revenues from the program, as shown in table 16, have totaled almost $51 billion since the first lease sale in 1953.

Table 16

OCS Revenues from 1953 to 1981

Calendar year	Bonuses	Royalties	Rents	Total
	(billions)			
1953-71	$ 4.47	$ 1.87	$0.11	$ 6.45
1972	2.25	.36	.01	2.62
1973	3.08	.40	.01	3.49
1974	5.02	.56	.01	5.59
1975	1.09	.62	.02	1.73
1976	2.24	.70	.02	2.96
1977	1.57	.92	.02	2.51
1978	1.77	1.15	.02	2.94
1979	5.08	1.52	.02	6.62
1980	4.20	2.14	.02	6.36
1981	6.82	2.45	.02	9.29
TOTAL	$37.59	$12.69	$0.28	$50.56

REDUCED BONUSES AND FINANCIAL BARRIERS UNDER THREE ALTERNATIVE SYSTEMS

Our regression analysis on the level of bonus bids, the results of which are shown in table 17, indicated that three alternative systems--(1) royalty rate bidding system (2) fixed net profit share system, and (3) sliding scale formula 6 system--decreased bonuses and financial barriers significantly when compared to the results of the traditional system. For example, under the royalty rate bidding system, the amount of up-front bonus money required to obtain a lease was reduced (through Interior's establishment of the bonus at a fixed nominal level) by almost 70 percent. This system, as noted in chapters 3 and 4, also paralleled or bettered the traditional system in generating company participation and competition in OCS lease sales. The fixed net profit share system also reduced bonuses by approximately 45 percent compared with the traditional system. However, this reduction in financial barriers did not result in an increase in company participation and competition. In fact, this system fared much worse than the traditional system in these areas. Most likely, industry perceives more negative than positive qualities under this system in comparison with the traditional system. The sliding scale formula 6 system, in contrast, worked as theorized.

This system generated 80 percent less in bonuses, compared with the traditional system, and resulted in significantly more company participation and competition.

Table 17

Impact of Alternative Bidding Systems on Bonuses Compared to the Traditional System

Bidding system	Impact on bonuses	Impact on bonuses by region (note a)			
		Gulf of Mexico	Pacific	Alaska	Atlantic
Royalty rate bidding	Decreased	Decreased	N/A	Decreased	N/A
One-eighth royalty	Similar	N/A	N/A	N/A	Similar
One-third royalty	Similar	Similar	Similar	N/A	Increased
Fixed net profit share	Decreased	Decreased	N/A	Similar	Similar
Sliding scale:					
Formula 1	Similar	Similar	N/A	N/A	Similar
Formula 2	Similar	Similar	Similar	Similar	N/A
Formula 3	Similar	N/A	N/A	N/A	Similar
Formula 4	Increased	Increased	N/A	N/A	N/A
Formula 5	Similar	N/A	N/A	Similar	N/A
Formula 6	Decreased	N/A	Decreased	N/A	N/A

a/N/A indicates that the bidding system was not used in the region.

Our regression analysis identified only one alternative system, sliding scale formula 4, which generated larger bonuses than the traditional system. This alternative system increased bonuses by 156 percent compared with the bonuses generated by the traditional system. However, it is very interesting to note that this system also increased company participation and competition for offshore leases. (See chapters 3 and 4.) While we were not able to determine the reasons for the increases in participation and competition without a correlating reduction in bonus bids, these results suggest that additional testing of the system is warranted.

Based on the results of our regression analysis, the remaining six alternative systems generated bonuses similar to the traditional system. Although five of these six systems generated bonuses slightly less than the bonuses generated by the traditional system, none of the differences were statistically significant. One generated slightly larger bonuses than the traditional system, but the difference was not significant.

In summary, our analysis showed that only three of the alternative systems tested have resulted in reduced bonus levels for offshore tracts--seven of the systems tested resulted in bonuses similar to or higher than the amounts obtained from leases under the traditional system. While these results run counter to the impacts anticipated, the reasons for this are not easy to determine. One possible explanation may be that almost all the alternative systems tested rely on the cash bonus as the bid variable and companies may not see any substantial differences in the Government's ultimate share of revenues from any follow-on production under these systems in comparison to the traditional system.

OTHER GENERAL OBSERVATIONS ON THE LEVEL OF BONUSES AND FINANCIAL BARRIERS

Bonuses tend to fluctuate without providing many consistent trends. However, the results of our regression analysis indicated that bonus levels were very sensitive to the tract's estimated value but were not significantly affected by the tract's water depth. That is, the more valuable tracts received the higher bonus bids while deeper water tracts received bonus bids similar to shallow water tracts.

Bonuses for high- and low-valued tracts have varied across bidding systems in each of the OCS regions. For example, bonuses for high-valued tracts were lower under the alternative systems in the Gulf of Mexico and the Pacific, but greater in Alaska and the Atlantic. Also, bonus bids for low-valued tracts were lower under the alternative systems only in Alaska and were greater under the alternative systems in the other three OCS regions. (See table 18.)

Table 18

Average Bonus Per Acre in the 23 Test Sales
by Tract Value Groups
(dollars)

Region	Tracts equal to or less than $250 per acre		Tracts greater than $250 per acre	
	Traditional	Alternative	Traditional	Alternative
All regions:	$1,649	$1,541	$5,428	$4,372
Gulf of Mexico	2,186	2,417	4,938	4,498
Pacific	1,366	1,610	9,609	4,358
Alaska	555	282	4,360	6,896
Atlantic	658	826	3,693	3,716

LACK OF CONTINGENCY REVENUES FROM ALTERNATIVE SYSTEMS

There has been a limited amount of contingency revenues to the Government from tracts leased under alternative bidding systems. Production, which provides trends in the receipt of contingency revenues (royalties, profit shares, etc.), exists on only seven tracts leased under only four of the alternative systems. A determination, as a result, regarding the Government's total receipts from tracts leased under alternative systems cannot be made until production occurs on more tracts.

CHAPTER 6

EXPLORATION TRENDS ARE MIXED

Exploration trends, in terms of the average time from lease date to the date the first well is drilled on a tract, showed that tracts leased under all but one of the alternative bidding systems were drilled sooner than tracts leased under the traditional system. However, it appears that a smaller percentage of tracts leased under most alternative systems are drilled in comparison to the percentage of tracts drilled under the traditional system. Only two of the alternative systems, for example, have had more tracts drilled, in terms of percentages, than the traditional system. However, these exploration trends provide only a historical perspective of what has occurred and also reflect the impacts of other variables on exploration.

Exploration trends from large and small companies have varied. Although both large and small companies have explored tracts quicker in recent years, large company exploration patterns vary little among bidding systems. Small companies, on the other hand, tend to explore traditionally leased tracts before tracts leased under alternative systems.

Insufficient time, however, has elapsed for exploration and production activities to fully develop on the majority of the tracts leased under the alternative bidding systems. Thus, exploration trends on these tracts, and comparisons of trends on alternative tracts with trends on traditional tracts, should be considered as preliminary at this time.

TIMELY EXPLORATION AND PRODUCTION ARE MAJOR OBJECTIVES

Another objective of the OCS Lands Act, as amended, is to promote timely and efficient exploration and production of OCS energy resources. Usually, exploration is the first activity undertaken once a lease is awarded. During exploration, wells are drilled to determine whether a tract contains oil and gas resources and whether there are sufficient quantities of resources present to warrant production. If resources are found in economically producible quantities, the lease holder then begins to develop the lease for production.

The theory as to whether the traditional and alternative bidding systems should (or should not) speed exploration and production is mixed. Some analysts theorize that the large bonuses generated by the traditional system provide a strong incentive to the lessee to recover its bonus investment by exploring and developing the lease. In contrast, other analysts theorize that large bonuses inhibit timely exploration because this investment tends

to deplete the lessee's capital needed to explore and develop the lease. Under both hypotheses, lease development time may vary depending on the type of bidding system used and the financial position of the lessee.

EXPLORATION AND PRODUCTION ARE OCCURRING FASTER

The average exploration and development time for leases has declined in recent years. For example, in 1976 the average time from the day the lease was awarded until the first exploratory well, for those tracts drilled, averaged 26 months. As shown in table 19, the average dropped to 6.2 months by 1981.

Table 19

Average Time from Lease Date to First Well (note a)
(months)

Calendar year	Average time for all tracts leased during the year	Average time by region (note b)			
		Gulf of Mexico	Pacific	Alaska	Atlantic
1974	18.7	18.7	N/A	N/A	N/A
1975	24.3	24.6	20.9	N/A	N/A
1976	26.0	29.0	N/A	11.5	28.0
1977	16.2	16.0	N/A	18.5	N/A
1978	16.2	16.4	N/A	N/A	14.9
1979	13.9	12.1	24.0	24.5	22.4
1980	10.2	10.2	N/A	N/A	N/A
1981	6.2	5.7	10.1	N/A	N/A

a/Averages include only those tracts drilled.

b/N/A indicates that no tracts were drilled which were leased during the calendar year.

The average time from lease date to first production date, as shown in table 20, has also declined. In 1974 the average time from the lease date to first production averaged 52.9 months. By 1981 the average had dropped to 10 months.

Table 20

Average Time from Lease Date to First Production (note a)
(months)

Calendar year	Average time for all tracts leased during the year	Average time by region (note b)			
		Gulf of Mexico	Pacific	Alaska	Atlantic
1974	52.9	52.9	N/A	N/A	N/A
1975	48.9	48.8	55.6	N/A	N/A
1976	34.0	34.0	N/A	N/A	N/A
1977	36.6	36.6	N/A	N/A	N/A
1978	27.8	27.8	N/A	N/A	N/A
1979	20.7	20.7	N/A	N/A	N/A
1980	17.0	17.0	N/A	N/A	N/A
1981	10.0	10.0	N/A	N/A	N/A

a/Averages include only those tracts with production.

b/N/A indicates that no tracts were placed in production which were leased during the calendar year.

The general trends discussed in this chapter are primarily the result of lease exploration and development activity in the Gulf of Mexico. Our analysis of the leasing activity during the 23 test sales revealed that 75 percent of all tracts leased, 94 percent of all tracts drilled, 98 percent of all wells drilled, and almost 100 percent of all tracts in production are located in the Gulf of Mexico. Therefore, overall statistics are significantly influenced by the exploration and development results achieved in the Gulf of Mexico.

EXPLORATION TENDED TO BE QUICKER UNDER ALTERNATIVE SYSTEMS

General trend data indicated that lessees tend to explore tracts leased under the alternative systems quicker, in terms of the average time from lease date to first well date, than tracts leased under the traditional system. For example, the average time to first well on alternative tracts leased in the 23 test sales was 12.5 months, compared with 16.8 months on traditionally leased tracts. Alternative tracts were also drilled faster than traditional tracts in all OCS regions except Alaska. However, these exploration trends provide only an historical perspective of what has occurred in the offshore program. These trends also reflect the impacts of other variables, i.e., tract value, water depth, location, etc., that affect exploration activities. Thus, cases of prompt exploration cannot be attributed totally to the type of bidding system used to lease the tract.

The fastest exploration occurred on tracts leased under the sliding scale formula 4 system, which averaged 7.4 months from lease date to first well. This was almost twice as fast as the average time for all tracts--15.5 months. In addition, tracts under the fixed net profit share system averaged 7.7 months from lease date to first well, and tracts under the sliding scale formula 6 system averaged 9.7 months. Tracts under the one-third royalty and sliding scale formula 2 systems also had quicker well times than traditional tracts. As shown in table 21, exploration times for tracts under the sliding scale formula 3 system were much longer, and times for tracts under the two remaining alternative systems, although less than, were similar to the results of the traditional system.

Table 21

Average Time from Lease Date to First Well in the 23 Test Sales by Bidding System
(months)

Bidding system	Average time for all tracts leased	Average time by region (note a)			
		Gulf of Mexico	Pacific	Alaska	Atlantic
Traditional	16.8	15.8	21.3	17.7	25.7
All alternatives:	12.5	10.8	19.1	22.6	21.0
Royalty rate bidding	15.1	12.8	N/A	20.8	N/A
One-eighth royalty	0	N/A	N/A	N/A	0
One-third royalty (note b)	12.4	9.1	8.4	N/A	25.4
Fixed net profit share b/	7.7	7.7	N/A	0	0
Sliding scale:					
Formula 1	15.7	16.3	N/A	N/A	14.3
Formula 2 b/	13.4	12.0	26.0	24.5	N/A
Formula 3	23.1	N/A	N/A	N/A	23.1
Formula 4 b/	7.4	7.4	N/A	N/A	N/A
Formula 5	0	N/A	N/A	0	N/A
Formula 6 b/	9.7	N/A	9.7	N/A	N/A

a/N/A indicates that the bidding system was not used in the region.

b/Bettered the results of the traditional system (by 3 months or more).

SMALLER PERCENT OF ALTERNATIVE TRACTS DRILLED

Even though alternative tracts tend to be explored quicker than traditionally leased tracts, a lesser percentage of alternative tracts were drilled compared with tracts drilled under the

traditional system. For example, 39 percent of the tracts leased under the traditional system were drilled, while a lesser percentage of tracts were drilled under all but two of the alternative systems. The fewest tracts drilled were leased under the one-eighth royalty and sliding scale formula 5 systems, where no tracts were drilled through January 1982. (See table 22.)

Table 22

Percent of Tracts Drilled in the 23 Test Sales by Bidding System
(percentage)

Bidding system	Percent of all tracts drilled	Percent of tracts drilled by region (note a)			
		Gulf of Mexico	Pacific	Alaska	Atlantic
Traditional	39	51	24	8	15
All alternatives:	25	45	15	5	6
Royalty rate bidding	18	63	N/A	7	N/A
One-eighth royalty	0	N/A	N/A	N/A	0
One-third royalty	36	55	17	N/A	31
Fixed net profit share	11	17	N/A	0	0
Sliding scale:					
Formula 1	27	80	N/A	N/A	10
Formula 2 (note b)	48	64	21	8	N/A
Formula 3	10	N/A	N/A	N/A	10
Formula 4 b/	47	47	N/A	N/A	N/A
Formula 5	0	N/A	N/A	0	N/A
Formula 6	5	N/A	5	N/A	N/A

a/N/A indicates that the bidding system was not used in the region.

b/Exceeded the results of the traditional system.

LARGE AND SMALL COMPANIES' PERFORMANCES DIFFER

Large and small companies have explored tracts faster in recent years, but differences exist in their exploration actions. For tracts leased between 1970 and 1978, large companies drilled their first well about 18.6 months after the lease date, compared with 12.4 months for tracts leased in 1978 and afterwards. Similarly, small companies drilled the first well about 16.2 months after the lease date for tracts leased prior to 1978 compared with 11.4 months for tracts leased since 1978.

Significant variations exist when company performance in OCS development is examined by region. To illustrate, there was no individual drilling activity in the Pacific, Alaska, or Atlantic regions by small companies on alternative tracts through January 1982. Small company exploration was limited to traditional leases in these regions and to Gulf of Mexico leases, while large companies explored tracts in all regions regardless of the bidding system. However, small companies, although not exploring alternative tracts outside the Gulf of Mexico on their own, were able to explore alternative tracts in the other regions through joint leases with large companies.

OTHER GENERAL OBSERVATIONS ON EXPLORATION TRENDS

Tract value significantly influences lease development. Based on Interior's tract evaluation, we noted that tracts valued greater than $250 per acre were drilled faster and averaged more wells per tract than lower valued tracts. In addition, more tracts valued over $250 per acre were drilled compared to tracts valued less than $250 per acre. However, exploration trends on alternative and traditional tracts varied. For example, the average time from lease date to first well, on tracts valued at less than $250 per acre, was 12.9 months for alternative tracts compared with 20.3 months for traditional tracts. On the other hand, exploration trends for high-valued tracts by bidding systems were closer--11.9 months for alternative tracts and 10.4 months for traditional tracts. (See table 23.)

Table 23

Average Time from Lease Date to First Well
by Tract Value Groups (note a)
(months)

Region	Tracts equal to or less than $250 per acre		Tracts greater than $250 per acre	
	Traditional	Alternative	Traditional	Alternative
All regions:	20.3	12.9	10.4	11.9
Gulf of Mexico	19.2	11.1	9.7	10.3
Pacific	27.5	23.7	14.6	8.4
Alaska	25.6	24.5	13.8	20.8
Atlantic	26.5	21.8	18.4	21.8

a/Table is based on general trends from the 23 test sales.

Time frames for exploration activities varied by bidding systems across water depths. Trend data showed that while large numbers of the traditional tracts were drilled regardless of water depth, the alternative tracts were usually drilled faster. However, there was one exception to this trend. For example, in the Alaska region, traditional tracts in less than 200 meters were drilled faster than alternative tracts.

RECENT USE OF ALTERNATIVE SYSTEMS

Significant use of alternative bidding systems has occurred only over the past few years. Consequently, insufficient time has elapsed for a large number of alternative tracts to be explored, and even more time is needed before production will occur. Thus, the final assessment of alternative systems' impact on exploration and production must be postponed until exploratory and developmental activities fully develop and are studied over a longer period. Any assessment of the impact on exploration and production activities is only preliminary at this time.

CHAPTER 7

COSTS OF ADMINISTERING THE ALTERNATIVE SYSTEMS

The costs to the Federal Government of using alternative bidding systems, compared with the costs of using the traditional system, have not been determined by the Administration. The fixed net profit share system is projected to require the most extensive administrative support, with the largest estimate being 3 additional staff years per tract placed in production. Interior officials have not identified who will be responsible for providing this administrative support nor have they determined the time interval for conducting the audit functions required under the system. Costs of using the remaining alternative systems are projected to be similar to the costs of the traditional system; however, no formal studies have been completed by the Department of Energy or Interior to support this projection.

PROGRAM COSTS AND STAFFING ESTIMATES ARE REQUIRED

Under section 18(b) of the OCS Lands Act, as amended, Interior is required to include in the OCS leasing program estimates of the appropriations and staffing requirements needed. Summarized in table 24 are the estimates submitted on May 11, 1982, in support of the leasing programs for fiscal years 1982, 1983, and 1984.

Table 24

Estimated Appropriation and Staff Requirements
for Fiscal Years 1982-84

Activity	Fiscal year 1982 Cost (million)	Fiscal year 1982 Full-time staff	Fiscal year 1983 Cost (million)	Fiscal year 1983 Full-time staff	Fiscal year 1984 Cost (million)	Fiscal year 1984 Full-time staff
Collection of resource information and valuation of tracts	$ 40.0	635	$ 45.0	626	$ 51.2	667
Interpretation of exploratory data	2.3	7	2.3	7	2.5	6
Environmental statements and studies	43.6	279	47.1	298	55.6	300
Supervision of lease operations	30.2	439	29.8	410	33.2	495
General administrative activities	8.7	213	9.8	245	13.6	256
TOTAL	$124.8	1,573	$134.0	1,586	$156.1	1,724

Although Interior is not required to estimate the costs of administering the alternative bidding systems, these cost estimates are needed to help determine whether a system should or should not be utilized. According to the OCS Lands Act Amendments' conference report, Interior should consider a variety of factors in utilizing the alternative systems, including the limiting of administrative burdens on Government and industry. Thus, we believe that the identification of these administrative burdens and costs is needed to adequately assess the advantages and disadvantages of each system.

COST ESTIMATES ARE LACKING

No formal cost data has been collected or projected for the alternative bidding systems, nor have any Interior studies been performed to determine what personnel requirements and skills are needed to monitor revenue collections under the various bidding systems. In response to our request for cost estimates, MMS stated in a letter dated August 18, 1982, that "specific budget data have not been developed on the cost of the alternative bidding systems to the Federal Government."

Neither the Department of Energy nor the Interior has identified the actual costs incurred to date in implementing the alternative systems. For example, in promulgating the regulations for these systems, the Energy Department conducted hearings, published requests for public comments, and instituted studies on the bidding systems. However, the costs involved in all these activities have not been specifically identified. Similarly, the Interior Department has not identified its costs for implementing the alternative systems.

Early estimates

Some estimates of the costs to use alternative bidding systems were developed at the time the OCS Lands Act Amendments were under congressional consideration. For example, Interior's Geological Survey estimated that the fiscal year 1979 costs to implement the alternative systems in one Senate version of the amendments would be $2.1 million and require 42 staff years. Similarly, it estimated that $2.4 million and 48 staff years would be required to implement the alternative systems in one of the House versions of the amendments. These estimates are based on the assumption that five sales of some 100 tracts each would have been held during fiscal year 1979.

The Geological Survey also estimated that the alternative systems would create a significant workload in its resource evaluation activities. It projected that the alternative systems would

require modification of the OCS tract evaluation model, utilization of the model extensively in processing for specific sales, and evaluation of the various bidding systems for preparing Interior's annual report to the Congress.

Current estimates vary

Current estimates of the costs and staffing requirements needed to support the alternative bidding systems vary. This may be due to the lack of production on tracts leased under the alternative systems and the fact that the bulk of the production is not projected to occur until 1985. As a result, the use of the alternative systems has had little effect on Interior's operations and costs at this time. Once these tracts reach production, Interior's responsibilities and related costs should increase.

While there is a wide variance in the oversight and additional recordkeeping and reporting responsibilities among the alternative systems, the fixed net profit share system is the only one projected to place extensive administrative burdens on Interior. For example, the fixed net profit share system requires that audits be conducted on each producing tract. Interior officials estimate that accomplishing these audits may require from 0.5 to 3 staff years of effort. Assuming a $30,000 staff year, an audit could cost from $15,000 to $90,000. However, Interior officials have not yet identified who will be responsible for conducting the audits or the time interval. Some officials have stated that the audits should be conducted annually and that a longer interval may be adequate. Given these unknowns, and that a tract could have a producing life of 15 years or more, we estimate that the audit costs to Interior for one tract under this system, based on the 0.5 to 3 staff years estimate at $30,000 per staff year, could range between $225,000 and $1.35 million over the life of a lease. Interior's costs from production on tracts leased under the other alternative systems could be reduced through automation. Interior is currently restructuring its automated royalty collection system for the fixed and sliding scale royalty leases.

COST TO INDUSTRY

Industry officials we interviewed were unable to provide specific information on the costs of using the alternative bidding systems. In their view, the fixed net profit share system was projected to require the most expensive administrative support from industry in terms of the bookkeeping duties, justification of expenses, and Government approval procedures. In response to an Interior Department request for industry comments in January 1982, one company indicated that the accounting costs for this system could be as high as $200,000 per year over the life of the lease.

CHAPTER 8

CONCLUSIONS AND RECOMMENDATIONS

Experience to date shows that a majority of the alternative bidding systems have paralleled or bettered the traditional system in generating company participation and competition in lease sales. Only two of the alternative systems have proven to be less effective than the traditional system. It is too early, however, to tell what impacts the alternative systems will have on total Government revenues, prompt lease exploration and production, or specific administrative costs to the Government. Accordingly, we believe the 5-year test period provided in the OCS Lands Act, as amended, should be extended. Because of the long lead-time between the award of a lease and exploration, and the uncertainties associated with actually finding oil and gas, it is difficult to predict when adequate information will be available to fully assess all the impacts of the alternative systems. However, we believe the test period should be extended for at least another 5 years.

However, it is important to note that, although the initial results from using most of the alternative bidding systems have generally paralleled or bettered the results of the traditional system, the alternative systems did not always work as theorized. Conceptually, the alternative systems, by requiring a larger Government share of the royalties or profits from any follow-on production, were designed to reduce the amount of up-front bonus money required to obtain a lease. This reduction in financial barriers to obtaining offshore leases--in the form of bonus money--would, in return, increase company participation and competition in OCS lease sales--especially from smaller companies. However, this has not been the case. Our analysis showed that small companies and new bidders in the offshore program have favored traditional tracts compared to alternative tracts and that most of the alternative systems generated bonus bids greater than or similar to the traditional system.

SYSTEMS THAT TEND TO WORK BETTER THAN THE OTHERS

Table 25 summarizes the results of the alternative bidding systems in comparison to the traditional system in leasing offshore lands. As shown in the table, the alternative systems that tend to increase company participation and competition in OCS lease sales are the

--Sliding scale formula 6 system.

--One-third royalty system.

--Sliding scale formula 4 system.

Table 25

Summary Results on the Impacts of the Alternative Bidding Systems Compared to the Traditional System

Bidding system	Impact on Participation a/	Competition a/	Financial barriers a/	Total revenues b/	Exploration b/	Production b/	Administrative costs b/
Royalty bid, fixed cash bonus	Similar	Increased	Decreased	Not known	Similar	Not known	Not documented
Cash bonus bid, fixed 12-1/2 percent royalty	Similar	Similar	Similar	Not known	Not known	Not known	Not documented
Cash bonus bid, fixed 33-1/3 percent royalty	Increased	Increased	Similar	Not known	Quicker	Not known	Not documented
Cash bonus bid, fixed net profit share	Decreased	Decreased	Decreased	Not known	Quicker	Not known	Not documented but projected to increase
Cash bonus bid, sliding scale royalty:							
Formula 1	Decreased	Similar	Similar	Not known	Similar	Not known	Not documented
Formula 2	Similar	Similar	Similar	Not known	Quicker	Not known	Not documented
Formula 3	Similar	Similar	Similar	Not known	Slower	Not known	Not documented
Formula 4	Increased	Increased	Increased	Not known	Quicker	Not known	Not documented
Formula 5	Similar	Similar	Similar	Not known	Not known	Not known	Not documented
Formula 6	Increased	Increased	Decreased	Not known	Quicker	Not known	Not documented

a/Results are based on statistical regression analysis.

b/Results are based on limited trend data existing through January 1982.

Why these bidding systems bettered the results of the traditional system is very difficult, if not impossible, to determine because of the numerous factors, mostly unknown, which can affect industry's level of participation and degree of competition in OCS lease sales. Our analysis did not provide explanations as to why some alternative systems performed better, or worse, in comparison to the traditional system.

However, it is important to note that the increases in company participation and competition did not always correspond with a reduction of financial barriers in bidding for leases. Of these three alternative systems, for example, only the sliding scale formula 6 system worked as theorized. This system, in addition to increasing company participation and competition in OCS sales, was also effective in reducing financial barriers to obtaining offshore leases without adversely affecting exploration trends.

The one-third royalty system and the sliding scale formula 4 system also resulted in increased participation and competition without adversely affecting exploration trends. However, neither reduced financial barriers. For example, financial barriers, in the form of bonus bids, remained about the same as those for the traditional system when the one-third royalty system was used and increased when the sliding scale formula 4 system was used. Why these two bidding systems increased company participation and competition, without a correlating reduction in bonus bids, cannot be readily determined. However, one should remember that as competition tends to increase, bidders are likely to pay more for a lease than when competition is less. Thus, the anticipated impact of reduced bonus levels may have been offset by a counter-balancing impact of higher bonuses brought about by increased competition. This may explain, in part, the leasing results generated by these two systems.

The royalty rate bidding system also generated results which generally bettered the results of the traditional system. As theorized, through the reduction of the up-front bonus money required to obtain a lease under the provisions of this system, there was a correlating increase in competition for tracts offered for lease under this system. The royalty rate bidding system also resulted in increased participation from small companies but generated only similar levels of participation by large companies compared with those experienced under the traditional system. Exploration experience to date also indicated that the royalty rate bidding system did not adversely affect lease exploration.

The alternative systems which have produced results similar to those experienced with the traditional system are the

--Sliding scale formula 2 system.

--Sliding scale formula 3 system.

--Sliding scale formula 5 system.

--One-eighth royalty system.

These bidding systems produced levels of company participation and competition in offshore lease sales similar to the traditional system. They also promoted bonus bids similar to those experienced with the traditional system.

The remaining two alternative systems have proven to be less effective than the traditional system for leasing OCS lands. First, the fixed net profit share system overall decreased company participation and competition compared to the traditional system, even though bonus bids were also less under this system. The additional accounting and auditing procedures required to correctly define and measure the Government's share of profits under this system, which were not readily accepted by industry, may have reduced company participation and competition for these tracts, as well as bonuses. Second, the sliding scale formula 1 system resulted in fewer companies participating and provided similar levels of competition compared to the traditional system. These mixed results may be due to the fact that since this was the first variation of the sliding scale system tested, and has not been used since 1978, some companies may not have participated because they were not familiar with all the characteristics of the system.

Although the initial results from using most of the alternative systems have generally paralleled or bettered the traditional system, small companies bidding for the first time in the OCS program since 1978 tended to favor tracts offered for lease under the traditional system. This result is a matter of concern since one of the major reasons for using the alternative systems was to permit more small companies to participate in OCS lease sales. Small companies overall also tended to favor tracts offered for lease under the traditional system rather than under the alternative systems. However, three of the alternative systems generated statistically more participation by small companies than the traditional system, four systems resulted in similar levels of participation, and three generated less. Large companies tended to participate and compete similarly on tracts offered for lease under most bidding systems, with three of the alternative systems generating more participation from large companies than the traditional system.

Another factor of concern is that only three of the alternative systems tested have resulted in reduced bonus levels for offshore tracts--seven of the systems tested resulted in bonuses similar to or higher than the amounts obtained from leases under the traditional system. While these results run counter to the impacts anticipated, the reasons for this are not easy to determine. One possible explanation is that almost all the alternative

systems tested rely on the cash bonus as the bid variable and companies may not see any substantial differences in the Government's ultimate share of revenues from any follow-on production under these systems in comparison to the traditional system.

It is also important to note that the impacts of the alternative systems compared with the traditional system do not track evenly in all OCS regions or leasing situations. In some situations a particular system did extremely well yet in another leasing region was less effective. For example, the effectiveness of the fixed net profit share system in generating competition varied in each of the OCS regions tested. It increased competition in the Atlantic, generated competition similar to the traditional system in Alaska, and decreased competition in the Gulf of Mexico. These varied results may be due to the differing levels of exploration and development costs, which are used to determine the Government and lessee shares of profits from production under the system, between the different OCS regions. Industry may perceive that development costs are less in the Gulf of Mexico, which would reduce its ultimate share of profits from lease production, than in the other OCS regions. As a result, companies would tend to compete less for tracts offered for lease in the Gulf of Mexico under this system than in the other regions. In other words, the financial benefits provided by each system, or industry's perception of them, do not track evenly in all OCS regions or leasing situations.

MORE TIME AND TESTING NEEDED

The results of the alternative systems on company participation, competition, and bonus bids, although mixed, have been favorable and suggest continued testing of the alternative systems. Furthermore, trends to date provide only a part of the picture of the total impacts of using these systems. Additional time and testing are needed before the full effects on Government production revenues and lease exploration and production are known. Insufficient time has elapsed for most tracts leased under the alternative systems to be explored and placed in production and, without production, the effect on royalty and profit share revenues cannot be determined. Thus, comparisons of revenue and exploration trends between the alternative and traditional systems should be considered as preliminary at this time. Also, as shown in chapter 6, there is usually a substantial lead-time between the time a lease is awarded and exploration begins and even a longer time until production begins. Thus, given these conditions and the uncertainties associated with actually finding oil and gas, it is very difficult to predict when adequate information will be available to analyze the full impacts of the various bidding systems on Government revenues and lease exploration and production. We believe Interior should continue testing the alternative systems, so that additional improvements may be achievable in OCS

leasing through analyses and design changes to the systems, until adequate information is available to assess all the effects of using these systems.

Another important impact that has not been adequately ascertained is the administrative cost to the Government of using the alternative systems. Although the net profit share system is the only system projected by Interior to require extensive administrative support, specific cost categories and staffing requirements have not been determined to support this assumption. Without adequate review and identification of all related expenses, there is no assurance that the costs and requirements of using the alternative systems will not increase in the future when additional tracts are placed in production. Thus, we believe that such cost estimates are needed to adequately assess all potential advantages and disadvantages of using each alternative system.

OTHER CONSIDERATIONS

As previously noted, the Interior Department's approach in testing the alternative systems has been to use those systems which feature the cash bonus as the bid variable--the same approach as the traditional system. Also, Interior has tested only those bidding systems specifically authorized by the OCS Lands Act, as amended. As a result, the extent to which other additional bidding systems can enhance the offshore program is difficult to measure. Many factors which are presently unknown, such as future oil and gas prices, production needs, general economic conditions, and current changes in the OCS program suggest that the Secretary of the Interior should maintain a flexible approach in selecting bidding systems for future sales. New leasing variations and bidding systems which feature a non-cash bonus bid variable may prove to be advantageous to the Government under a number of economic conditions or leasing situations.

Moreover, the Secretary should continue to have the discretion to tailor the bidding system to the tract being offered for lease, recognizing the variance of each system's performance. Bidding systems should also be tailored to the different, sometimes conflicting, objectives of the offshore leasing program and their relative importance to the Federal Government. For example, bidding systems that tend to generate increased competition may not necessarily encourage expeditious exploration, both of which are concurrent objectives of the offshore program but differ in priority depending on one's perspective.

CHANGING FEDERAL ROLES

Since the Energy Department has no remaining OCS-related responsibilities, except for the annual reporting requirement on the use of the various bidding systems, we believe the

Interior Department is currently in the best position to determine the effectiveness of the alternative bidding systems. This is especially so since the Interior Department has the on-hand expertise and responsibility for implementing the alternative systems. To make the transfer of offshore responsibilities complete, we believe that Energy's reporting requirement should be repealed and that this information be required in Interior's report. Thus, Interior's annual report to the Congress, rather than Energy's report, should be the primary vehicle for providing information to the public on the use and effectiveness of the alternative systems.

RECOMMENDATIONS TO THE CONGRESS

We recommend that Congress amend section 8(a)(5)(B) of the OCS Lands Act, as amended, to provide for continued use of alternatives to the cash bonus bid, fixed royalty bidding system in leasing offshore lands for another 5-year period. This can be accomplished by changing section 8(a)(5)(B) to read:

> "The bidding systems authorized by paragraph (1) of this subsection, other than the system authorized by subparagraph (A), shall be applied to not less than 20 per centum and not more than 60 per centum of the total area offered for leasing each year during the ten year period beginning on September 18, 1978."

We further recommend that the Congress delete the requirement that the Secretary of the Energy submit an annual report to the Congress on the use of the alternative bidding systems and transfer the requirement to the Secretary of the Interior. This can be accomplished by deleting section 8(a)(9) of the OCS Lands Act, as amended, and amending section 15(2) by adding the following:

> "(F) the schedule of all lease sales held during such year and the bidding system or systems utilized;
>
> (G) the schedule of all lease sales to be held the following year and the bidding system or systems to be utilized;
>
> (H) the benefits and costs associated with conducting lease sales using the various bidding systems; and
>
> (I) if applicable, the reasons why more than 80 per centum or less than 40 per centum of the area leased in the past year, or to be offered for lease in the upcoming year, was or is to be leased under the bidding system authorized by subparagraph (A) of paragraph (a)(1) of section 8 of this Act."

RECOMMENDATION TO THE SECRETARY OF THE INTERIOR

We recommend that the Secretary of the Interior comply with the existing reporting requirements of section 15(2) of the OCS Lands Act, as amended, to provide the Congress adequate and timely information on the impacts of using the alternative bidding systems. Interior's report should also include a determination of the administrative costs to implement the different alternative bidding systems.

APPENDIX I

NINETY-SEVENTH CONGRESS

Congress of the United States

House of Representatives

ENVIRONMENT, ENERGY, AND NATURAL RESOURCES
SUBCOMMITTEE
OF THE
COMMITTEE ON GOVERNMENT OPERATIONS
RAYBURN HOUSE OFFICE BUILDING, ROOM B-371-B-C
WASHINGTON, D.C. 20515

March 8, 1982

Honorable Charles A. Bowsher
Comptroller General
U.S. General Accounting Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Bowsher:

As you know, the Subcommittee on Environment, Energy and Natural Resources has been investigating the Interior Department's outer continental shelf oil and gas leasing activities. A particular area of concern to the Subcommittee is the question of royalty rates for oil and gas production, more specifically, whether current royalty rates set by the Interior Department for lease sales ensure the best return to the U.S. Treasury.

At a time when social programs are being severely curtailed in an attempt to balance the budget, I believe it essential that we maximize revenues from publicly owned energy resources in the OCS and on-shore. I am not convinced that the Department of Interior is pursuing such a policy. The Treasury may be losing millions and ultimately billions of dollars in revenues as a result of the low royalty rate required under the present system.

It is my understanding, for example, that the Interior Department offered a number of deep-water tracks in South Atlantic Sale 56 at the minimum royalty rate of 12.5 percent, well under the traditional rate of 16.66 percent. At the same time many individual states are leasing their offshore lands under bidding arrangements similar to those used by Interior, but requiring as much as a 25 percent royalty.

Since the Secretary of Interior has proposed to accelerate leasing through a 5-year plan which will place under lease up to a billion acres of public property, nearly all of the OCS, it is essential that we act now to obtain the highest return from those leases.

I request that you investigate the Department of Interior's rationale and practices in setting royalty rates for offshore oil and gas production. This analysis should compare Interior's approaches in setting royalty rates with those of various states leasing offshore lands and also those of foreign governments with offshore development programs. In your analysis please address the revenue implications associated with the differing practices. 1/

The 1978 amendments to the Outer Continental Shelf Lands Act directs the Department to experiment with different bidding systems, including systems which will reduce front end cash bonus bidding and allow greater competition. As part of your review I would appreciate an analysis of whether the Department of Interior has indeed significantly reduced the use of front end cash bonus bidding.

I request that you provide the Subcommittee with a report of your investigation by July 1982. Please coordinate your activities with Mr. Lester Brown of the Subcommittee staff.

Thank you for your cooperation.

Sincerely,

TOBY MOFFETT
Chairman

1/GAO note: Our report "Interior Should Continue Use of Higher Royalty Rates For Offshore Oil And Gas Leases," GAO/RCED-83-30, Dec. 20, 1982, was also prepared in response to this request. The report highlights Interior's use of higher royalty rates and related revenue implications.

ECONOMETRIC METHODS AND RESULTS

This appendix describes the quantitative analysis used in identifying the impacts of alternative bidding systems on the degree of company participation and competition in OCS lease sales and on the level of financial barriers--bonus levels--to obtaining offshore leases. In examining the impacts of the alternative systems, we used standard statistical techniques for analyzing the data on offshore leasing activities. The statistical tests involved comparing bidding results for tracts leased under each alternative system to bidding results for tracts leased under the traditional system. The universe for this comparison was the 1,618 tracts leased in the 23 test sales employing alternative systems through January 1982.

METHODOLOGY

Regression analysis was used to isolate the influences that (1) the geographic region of the sale, (2) the expected presale value of the tract, (3) the water depth of the tract, and (4) the price of crude oil at sale time had on the bidding results and to measure the impacts of each alternative bidding system. The regression results are statistically significant at the 95-percent level or better. The models estimated were

1) $NUMCOMP = a + b_1\,PSVALUE + b_2\,WATDEPTH + b_3\,PRCOIL + b_4RB + b_5R8 + b_6R3 + b_7NP + b_8S1 + b_9S2 + b_{10}S3 + b_{11}S4 + b_{12}S5 + b_{13}S6$

where NUMCOMP = number of companies bidding (measure of participation)
PSVALUE = presale value
WATDEPTH = depth of water above leased tract
PRCOIL = price of crude oil
RB = royalty rate bidding system
R8 = one-eighth royalty system
R3 = one-third royalty system
NP = fixed net profit share system
S1 = sliding scale formula 1
S2 = sliding scale formula 2
S3 = sliding scale formula 3
S4 = sliding scale formula 4
S5 = sliding scale formula 5
S6 = sliding scale formula 6.

2) NUMBIDS = (same as 1)
where NUMBIDs = number of bids per tract (measure of competition).

3) BONUSBID = (same as 1)
where BONUSBID = bonus amount in the winning bid (measure of financial barriers).

Each of the alternative systems (RB through S6) took the form of a dummy variable and, as a result, measured the difference in the impact from the traditional system, which was omitted from each equation. The constant term represents the traditional bidding system.

RESULTS

The results of our regression analysis are summarized in table 1.

Participation

For participation (all companies) the coefficients on six alternative bidding systems were negative; however, only two were significant, indicating that these two systems generated less participation than the traditional system.[1] The other four were not, indicating that these systems generated results similar to the traditional system. The coefficients of the remaining four systems were positive. Three of these were significant, indicating that these systems generated more participation than traditional system. The remaining system's coefficient was not significant. In summary, these results showed that half of the alternative systems generated levels of company participation similar to the traditional system, three generated more, and two generated less.

Comparing the results for large and small companies revealed overall similarities in five of the ten systems; however, the remaining five systems bring out significant differences in participation. First, the royalty rate bidding system increased participation by 1.3 small companies on average, but there was no significant difference in participation by large companies under this system. Second, the one-eighth royalty system discouraged participation by small companies (by 0.6 companies on average), while making no difference for large companies. Third, the results of the fixed net profit share system paralleled the results of the one-eighth royalty system. Fourth, the sliding scale formula 1 system discouraged small company participation (by 0.9 companies on average), while making no difference for large companies. Fifth, the sliding scale formula 6 system encouraged large company participation (by 1.4 companies on average), but small companies were apparently indifferent to whether this system or the traditional one was used.

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[1]Coefficients were considered significant where the t-ratio was greater or less than $\pm$ 1.70. Where the t-ratio fell within this range, the coefficients were considered similar.

APPENDIX II

Table 1

Regression Results

Bidding system	Participation			Competition	Revenues
	All companies	Small companies	Large companies	Number of bids	Bonus bids
Royalty rate bidding	+0.41	+1.27*	+0.07	+1.35*	-12.75*
One-eighth royalty	-0.29	-0.64*	+0.29	+0.06	- 7.70
One-third royalty	+6.33*	+1.31*	+1.47*	+1.73*	-3.03
Fixed net profit share	-1.64*	-0.86*	-0.00	-0.48*	-8.12*
Sliding scale:					
Formula 1	-3.48*	-0.92*	-0.03	-0.35	-3.29
Formula 2	-0.54	-0.10	+0.14	+0.10	+0.99
Formula 3	-1.29	-0.04	-0.12	-0.36	-0.35
Formula 4	+2.92*	+0.83*	+0.60*	+0.89*	+10.06*
Formula 5	-3.59	-1.01	-0.43	-1.41	-9.26
Formula 6	+5.01*	+0.32	+1.42*	+1.29*	-14.49*
CRSQ (note a)	0.15	0.15	0.12	0.12	0.57
DW (note b)	1.49	1.50	1.52	1.55	1.64
F (note c)	23.83	23.64	18.07	17.92	71.12

*Significant at 0.95 confidence level.

a/CRSQ or "corrected R-squared" is the coefficient of the multiple determination corrected for the number of degrees of freedom.

b/DW or "Durbin-Watson statistic" is a test for autocorrelation of residuals.

c/The "F" statistic is a measure of significance for the entire regression.

Source: GAO generated table.

Competition

The regression results on the number of bids per tract leased are also presented in table 1. The coefficients on four alternative systems were negative, but only one was significant--for the fixed net profit share system. The coefficients on the remaining six systems were positive, but only four were significant--for the royalty rate bidding, one-third royalty, and sliding scale formula 4 and 6 systems. The remaining systems generated a similar number of bids per tract to the traditional system.

Revenues

In the case of bonus bids, most of the coefficients were negative; however, only three were significant. Thus, three of the alternative systems were more effective in reducing financial barriers than the traditional system. On the other hand, one coefficient was positive and significant, indicating that only the sliding scale formula 4 system generated significantly larger bonuses than the traditional system. The coefficients for the remaining six alternative systems were not significant, which mean that they generated bonus bids similar to the traditional system.

General Results

The variables for tract value, water depth, and oil prices generally had the expected effects in each model. Tract value was uniformly positive and significant: higher values generating more participation, competition, and bonuses. Water depth was generally negative and significant except for large companies who have the capability to drill in shallow or deeper waters with equal ease. The price of oil had a positive effect on bonuses and no significant effect on the number of bids. Price had an unexpected (although very small) negative relationship with large company participation.

In order to check for colinearity between the dummy variables and the other independent variables, a set of correlations was performed. In 80 percent of the cases, the correlation was 0.1 or less. The maximum correlation was 0.4 in only 5 percent of the cases.

Because of the generally low corrected R-squares, we also performed an F-test to see whether the growth in the CRSQ's from the addition of the set of dummy variables representing the alternative systems was significant. The growth in the CRSQ's was significant at the 95 percent level or better in all cases. Thus, we have a high degree of confidence that the alternative bidding systems "matter."

There are several reasons for the relatively low CRSQ's. First, cross-sectional data typically yields lower CRSQ's than does time-series data. Second, micro data also tends to lower CRSQ's relative to aggregated data. Third, a number of variables

internal to prospective bidding firms will clearly influence whether they choose to bid and how much they offer. These include: profits, drilling capabilities, portfolio of drilling prospects, supply position, perceptions of risk, management, and others. While these variables would be important to the goal of explaining overall bidding behavior, our goal was to explain the impact of those policy variables under the Government's control. These are, of course, the tracts offered for sale and the bidding system attached to each tract. While data on the internal, firm-specific variables is generally not available, data for the policy-relevant variables was both complete and of high quality. The extent and quality of the data are reviewed in appendix III.

RELIABILITY ASSESSMENT OF INTERIOR'S AUTOMATED DATA FILES

We retrieved data from computer systems maintained by the Department of the Interior in Reston, Virginia; Denver, Colorado; and New Orleans, Louisiana in performing our review. These systems are the sources of lease, production, and revenue data on the OCS program. While the reliability of the data in the systems was not significantly limited, we experienced problems with the data's applicability and usefulness due to the various data formats used in the different data systems.

INTERIOR'S DATA SYSTEMS USED IN OUR REVIEW

We retrieved and analyzed data from the following systems in assessing the impacts of alternative bidding systems on participation, competition, revenues, exploration, and production in the OCS leasing program:

--The Minerals Management Service's lease, production, and revenue (LPR-5) data system maintained in Reston, Virginia. This data system contains offshore lease bidding information on sales through October 1980 including the names of bidders, tract data, and the amounts of all bonus bids received. To supplement this system, we also collected data from the Bureau of Land Management's (BLM) postsale system maintained in Denver, Colorado. This system provides extensive analysis of the LPR-5 system and contains similar information through the most recent sales. We combined these two systems to generate trend data for our analysis on participation, competition, and Government revenues.

--The Minerals Management Service's lease data system and well history system maintained in New Orleans, Louisiana. Both the lease data system, containing original lessees, and the well history system, containing well and production data, are primarily used for historical recordkeeping. These systems were combined by us to show trends in the exploration and production activities discussed in this report.

The automated data was used extensively in our evaluation and was the basis for the findings and recommendations in this report. Because of the data's importance and audit significance, we performed a reliability assessment to determine its accuracy and completeness. Our assessment was made in accordance with the GAO audit guide "Assessing the Reliability of Computer Output."

SCOPE OF OUR RELIABILITY ASSESSMENT

Our reliability assessment was performed in three major phases. First, we determined whether prior audits and evaluations of the data systems could be used to provide reasonable assurance that the data was accurate and complete. Second, we determined how the computer systems generated the requested data from preparation of source documents through final distribution and use of output. Specifically, we reviewed system documentation files and input preparation instructions, and we interviewed MMS and BLM computer personnel and users. Finally, we tested the data's reliability by comparing the computer processed data on a random sample of leases to the source documents.

RESULTS OF WORK PERFORMED

Prior audits and evaluations were insufficient to satisfy our data validation requirements for the four data systems used for our review. According to agency officials, no evaluations of these systems were conducted by internal auditors or outside consultants. However, in February 1981, we issued a report entitled "Impact of Regulations After Federal Leasing on OCS Oil and Gas Development" (EMD-81-48) which discussed the well history file. At that time, we concluded that the data in MMS' well history file was reliable since only 3 percent of the 307 leases sampled in the report had errors.

In reviewing the preparation and flow of source documents, we noted no major weaknesses in the data systems. However, we could not identify many principal users of these automated systems and therefore could not develop a general idea about the data's reliability from a user's perspective.

MMS' LPR-5 system and BLM's postsale system

We relied exclusively on the results of our verification of a lease sample to determine the data's reliability in both MMS' LPR-5 system and BLM's postsale system. Our review of both the LPR-5 and postsale systems disclosed that none of the data elements for the 171 tracts verified contained errors. In our assessment, we verified the data for three offshore sales (42, 49, and 56), and compared the lease and bid documents against the information on the two data systems. We considered the data in error if the bidding system, sale date, bidders, bonus bids, and size of the tracts were incorrect. In addition, since Sales A62 and 62 are contained in both systems, a comparison of the data was made to determine if they had like information. With the exception of the numerical designations assigned to identify each oil company placing bids, the information was the same in both data systems.

APPENDIX III

MMS' lease data system and well history system

For the assessment of both the lease data system and well history system, we initially selected a preliminary nonstatistical sample of 33 leases and traced the data in both systems to source documents in order to establish an expected error rate. This rate was later used to limit the size of our random sample. We verified (1) the lease number, data, area, bidding system, and the original lessee to the lease document; (2) the sale date to the bid acceptance transmittal letter; (3) the well data to the well completion report or sundry notice; and (4) the date the lease was placed in production to the monthly report of operations. We found errors in three leases, for an expected random sample error rate of approximately 9 percent. In each instance, the spud date of the earliest well was either not recorded or incorrect. Based on the expected error rate of 9 percent, with a maximum allowable error of plus or minus 4 percent, a universe of 2,154 leases, and a 95-percent confidence level, we selected 182 leases for our random sample. In the verification of our random sample, we considered a lease record in error if (1) the bidding system, sale date, or original lessee was incorrect; (2) the date of the first well was incorrect; (3) an existing well was not recorded in the system; or (4) the date of first production was not recorded or incorrectly recorded.

We found that records involving 14 of 182 leases, or 7.7 contained errors. Specifically, 13 leases had one error each, and one lease had two errors. Errors in two of these lease records did not significantly impact our analysis. For example, one lease record had an incorrect lessee identified from the lease data system, which had no effect on our analysis, and one lease record had an incorrect well date which was in error by only 3 days in the well history system. The errors identified are categorized below:

Errors	Number of leases	Error rate
Existing well not recorded	10	5.5
Date of first well incorrect	1	.5
Incorrect lessee	2	1.1
Date of first production incorrect	2	1.1

System problems

There were numerous problems with the applicability and usefulness of these automated systems in terms of the interfacing of data files. For example, data in one system was recorded using a

different format or code than another system. Differing formats and codes existed because those files were created to serve regional needs only, thus each regional office manipulated its own data base, and no attempt was made to establish a commonality of format or coding among regions. Some of major problems of interfacing these various systems follow:

--Coding schemes used to identify oil companies in one system were different than those in another. Thus, two sets of numbers identified one company.

--The systems did not contain the same essential information. For example, water depths and other information were found in some systems but not in others.

--Complete records for some sales were lost.

--Documentation for BLM's postsale system stated that a maximum of 18 records could be placed on the tape; we found a maximum of 45 records.

--Some systems called for numeric codes for data fields; instead we found alphabetic codes.

--Bidding systems were identified in BLM's postsale system with a specific alpha-numeric code; although somewhat self explanatory, no documentation existed to specifically define what these codes were.

--For some sales, the size of the tract was recorded in hectares instead of acres.

In conclusion, the data in all the systems can be considered sufficiently reliable for our analysis. Neither the error rate of 7.7 percent found in the New Orleans data, nor the inadequate files' documentation and interface found in several areas were serious enough to render the data unacceptable. However, future users should not fully rely on the documentation describing the data elements in these systems. Users should assure themselves that they have a clear understanding of what has actually been recorded before using the systems. A significant amount of time was required in our review to correct or modify the data for consistency before performing our analysis.

APPENDIX IV

TABLES SHOWING TRENDS IN THE USE OF ALTERNATIVE BIDDING SYSTEMS

This appendix provides 20 tables listing various indicators of (1) company participation, (2) competition for OCS leases, (3) revenues to the Government, and (4) lease exploration and production. These tables also include comparisons of the results of using the alternative bidding systems, on the four areas listed above, with the results of the traditional system. Like the general trend data presented in the chapters of this report, tests were not conducted to determine whether the differences in these comparisons were statistically significant. The following tables were provided only to show historical trends in OCS leasing and development for consideration by the Interior Department in future offshore lease sales.

PARTICIPATION TRENDS

Trends in the percentage of companies bidding in OCS lease sales that obtained leases from 1970 through 1981 are shown in table 1. The highest rate occurred in 1975 when 91 percent of the companies submitting bids won leases. However, the table does not account for how many bids a company may have submitted--the table shows only whether a company obtained a lease.

Table 1

Companies Winning Offshore Leases from 1970 through 1981

Calendar year	Percentage winning leases for all sales	Percentage winning leases by region			
		Gulf of Mexico	Pacific	Alaska	Atlantic
1970	89	89	-	-	-
1971	46	46	-	-	-
1972	90	90	-	-	-
1973	83	83	-	-	-
1974	81	81	-	-	-
1975	91	91	85	-	-
1976	76	71	-	82	73
1977	90	90	-	84	-
1978	82	81	-	-	91
1979	90	87	86	95	97
1980	85	85	-	67	-
1981	86	85	70	50	96

Large company participation in offshore lease sales

Table 2 shows the number of large companies placing bids in the 23 test sales by tract value group. For example, 19 large companies placed bids on traditional tracts valued at less than $250 per acre in the Atlantic, while 18 placed bids on alternative tracts in the same tract value group. Table 2 indicates that large company participation on both low- and high-valued tracts is not significantly impacted by the use of either traditional or alternative bidding systems.

Table 2

Number of Large Companies Participating in Offshore Lease Sales by Tract Value Groups

Region	Tracts equal to or less than $250 per acre		Tracts greater than $250 per acre	
	Traditional	Alternative	Traditional	Alternative
All regions:	21	21	21	21
Gulf of Mexico	21	21	21	21
Pacific	19	17	20	18
Alaska	12	13	12	14
Atlantic	19	18	19	20

Table 3 shows the number of large companies placing bids in the 23 test sales for tracts grouped by water depths. With the exception of the Pacific region, fewer large companies participated on deep-water tracts than on shallow-water tracts. The use of either traditional or alternative systems does not appear to influence participation significantly--except in the Atlantic on deep-water tracts.

Table 3

Number of Large Companies Participating in Offshore Lease Sales by Water Depth Groups

Region	Tracts in water less than or equal to 200 meters		Tracts in water greater than 200 meters	
	Traditional	Alternative	Traditional	Alternative
All regions:	21	21	20	20
Gulf of Mexico	21	21	14	17
Pacific	19	17	20	16
Alaska	12	15	-	1
Atlantic	19	20	5	18

Trends in the number of large companies participating in the 23 test sales by bidding system are shown in table 4. For example, more large companies (21) submitted bids on tracts offered under the traditional system than on tracts offered under any other alternative system. Only two large companies placed bids on tracts offered under the sliding scale formula 5 system.

Table 4

Large Companies Participating in Offshore Lease Sales by Bidding System

Bidding system	Number of large companies for all sales	Number of large companies by region			
		Gulf of Mexico	Pacific	Alaska	Atlantic
Traditional	21	21	20	12	19
All alternatives:	21	21	20	15	20
Royalty rate bidding	14	6	-	11	-
One-eighth royalty	18	-	-	-	18
One-third royalty	20	16	15	-	19
Fixed net profit share	20	19	-	8	14
Sliding scale:					
Formula 1	15	13	-	-	8
Formula 2	19	19	8	11	-
Formula 3	15	-	-	-	15
Formula 4	18	18	-	-	-
Formula 5	2	-	-	2	-
Formula 6	17	-	17	-	-

Trends in the percentage of large companies obtaining leases in the 23 test sales are shown in table 5. For example, all of the large companies submitting bids on tracts offered for lease under the traditional system and sliding scale formula 2 and 5 systems won leases. However, table 5 does not account for how many leases a company may have bid on before obtaining a lease.

Table 5

Percentage of Large Companies Winning Offshore Leases by Bidding Systems

Bidding system	Percentage winning leases for all sales	Percentage winning leases by region: Gulf of Mexico	Pacific	Alaska	Atlantic
Traditional	100	100	90	92	84
All alternatives:	95	95	72	80	90
Royalty rate bidding	43	0	-	55	-
One-eighth royalty	89	-	-	-	89
One-third royalty	90	69	73	-	58
Fixed net profit share	95	89	-	50	57
Sliding scale:					
Formula 1	67	38	-	-	88
Formula 2	100	95	63	91	-
Formula 3	80	-	-	-	80
Formula 4	89	89	-	-	-
Formula 5	100	-	-	100	-
Formula 6	59	-	59	-	-

Small company participation in offshore lease sales

Table 6 shows the number of small companies submitting bids in the 23 test sales for tracts grouped by Interior's presale value. Fewer small companies placed bids on alternative tracts in most tract value groups than on traditional tracts. The exceptions to this trend occurred in the Alaskan and Atlantic regions, where small company participation varied.

Table 6

Number of Small Companies Participating in Offshore Lease Sales by Tract Value Groups

Region	Tracts equal to or less than $250 per acre		Tracts greater than $250 per acre	
	Traditional	Alternative	Traditional	Alternative
All regions:	169	130	152	110
Gulf of Mexico	134	109	127	82
Pacific	45	22	35	26
Alaska	13	21	14	9
Atlantic	33	18	29	35

Table 7 shows trends in the number of small companies placing bids in the 23 test sales for tracts grouped by water depths. As shown in the table, more small companies participated on shallow water tracts than on deep water tracts. Generally, although there are variations in some regions, fewer small companies participated on alternative tracts than on traditional tracts, regardless of water depth.

Table 7

Number of Small Companies Participating in Offshore Lease Sales by Water Depth Groups

Region	Tracts in water less than or equal to 200 meters		Tracts in water greater than 200 meters	
	Traditional	Alternative	Traditional	Alternative
All regions:	165	139	45	36
Gulf of Mexico	146	115	12	21
Pacific	28	21	39	15
Alaska	15	21	-	-
Atlantic	37	36	4	10

Trends in the number of small companies participating in the 23 tests sales by bidding system are shown in table 8. In general, the table shows that more small companies participated on traditional tracts than on alternative tracts. For example, 179 small companies placed bids on traditional tracts, while 144 placed bids on alternative tracts.

Table 8

Small Companies Participating in Offshore Lease Sales by Bidding System

Bidding system	Number of small companies for all sales	Number of small companies by region			
		Gulf of Mexico	Pacific	Alaska	Atlantic
Traditional	179	146	48	15	37
All alternatives:	144	115	29	21	37
Royalty rate bidding	53	42	-	15	-
One-eighth royalty	5	-	-	-	5
One-third royalty	69	43	15	-	31
Fixed net profit share	58	58	-	2	5
Sliding scale:					
Formula 1	33	33	-	-	3
Formula 2	77	70	4	9	-
Formula 3	13	-	-	-	13
Formula 4	55	55	-	-	-
Formula 5	2	-	-	2	-
Formula 6	20	-	20	-	-

Trends in the percentage of small companies obtaining leases in the 23 test sales are shown in table 9. For example, all of the small companies submitting bids on tracts offered for lease under the one-eighth royalty and sliding scale formula 5 systems won leases. Table 9, however, does not account for how many bids a company may have submitted.

Table 9

Percentage of Small Companies Winning Offshore Leases by Bidding System

Bidding system	Percentage winning leases for all sales	Percentage winning leases by region			
		Gulf of Mexico	Pacific	Alaska	Atlantic
Traditional	91	91	79	73	68
All alternatives:	69	66	59	86	65
Royalty rate bidding	30	12	-	73	68
One-eighth royalty	100	-	-	-	100
One-third royalty	43	28	40	-	45
Fixed net profit share	62	60	-	100	40
Sliding scale:					
Formula 1	33	27	-	-	100
Formula 2	74	71	75	100	-
Formula 3	85	-	-	-	85
Formula 4	69	69	-	-	-
Formula 5	100	-	-	100	-
Formula 6	55	-	55	-	-

COMPETITION TRENDS

Trends in the percentage of tracts bid upon from 1970 through 1981 are shown in table 10. For example, 92 percent of the tracts offered in both 1970 and 1972 received bids. The table also shows that, beginning with 1974, only about half the tracts offered for lease have received bids through 1981.

Table 10

Percentage of Tracts Receiving Bids from 1970 Through 1981

Calendar year	Percentage receiving bids for all sales	Percentage of tracts receiving bids by region			
		Gulf of Mexico	Pacific	Alaska	Atlantic
1970	92	92	-	-	-
1971	72	72	-	-	-
1972	92	92	-	-	-
1973	70	70	-	-	-
1974	44	44	-	-	-
1975	29	28	30	-	-
1976	51	46	-	43	66
1977	68	68	-	67	-
1978	48	62	-	-	25
1979	57	74	37	54	52
1980	53	81	-	18	-
1981	42	64	73	8	28

Competition from large companies

Table 11 shows trends in the number of bids by large companies in the 23 test sales for tracts grouped by Interior's presale value. For example, large companies submitted an average of 3.1 bids per traditional tract valued over $250 per acre, while alternative tracts in the same value group received an average of 3.0 bids per tract from large companies. It is significant to note that high-value tracts offered under alternative systems attracted about one less bid per tract in the Pacific, Alaska, and Atlantic OCS regions. Gulf of Mexico high-value tracts attracted about the same number of bids per tract regardless of whether the traditional or alternative bidding systems were used.

Table 11

Bids per Tract from Large Companies by Tract Value Groups

Region	Tracts equal to or less than $250 per acre		Tracts greater than $250 per acre	
	Traditional	Alternative	Traditional	Alternative
All regions:	1.9	2.1	3.1	3.0
Gulf of Mexico	2.0	2.3	2.6	2.8
Pacific	2.1	1.9	4.3	3.3
Alaska	1.6	2.0	3.8	2.5
Atlantic	2.0	1.7	4.9	3.2

Table 12 shows trends in the number of bids by large companies in the 23 test sales for tracts grouped by water depth. Large companies tended to offer more bids on shallow water tracts than deep water tracts. However, the differences in the number of bids per tract were slight.

Table 12

Bids per Tract from Large Companies by Water Depth Groups

Region	Tracts in water less than or equal to 200 meters		Tracts in water greater than 200 meters	
	Traditional	Alternative	Traditional	Alternative
All regions:	2.3	2.5	2.3	2.2
Gulf of Mexico	2.2	2.5	1.9	2.5
Pacific	3.8	3.0	2.4	2.1
Alaska	1.9	2.1	-	1.0
Atlantic	2.6	2.6	1.3	2.2

Trends in the number of bids from large companies per tract for each bidding system tested in the 23 test sales are shown in table 13. Tracts offered for lease under the one-third royalty system received an average of 3.7 bids from large companies--more than any other bidding system. Overall, the average bids per tract for all alternative systems, viewed collectively, was about the same as that for the traditional system.

Table 13

Number of Bids per Tract from Large Companies by Bidding System

Bidding system	Bids per tract for all sales	Bids per tract by region			
		Gulf of Mexico	Pacific	Alaska	Atlantic
Traditional	2.3	2.2	2.8	1.9	2.5
All alternatives:	2.4	2.5	2.4	2.1	2.4
Royalty rate bidding	2.5	2.8	-	2.4	-
One-eighth royalty	2.2	-	-	-	2.2
One-third royalty	3.7	2.8	2.7	-	6.7
Fixed net profit share	2.0	2.1	-	1.6	2.1
Sliding scale:					
Formula 1	2.0	2.3	-	-	1.9
Formula 2	2.5	2.7	1.6	2.3	-
Formula 3	2.2	-	-	-	2.2
Formula 4	2.7	2.7	-	-	-
Formula 5	1.3	-	-	1.3	-
Formula 6	3.4	-	3.4	-	-

Competition from small companies

Table 14 shows trends in the number of bids by small companies in the 23 test sales for tracts grouped by their presale value. Small companies tended to offer more bids on high-value tracts (.5 bids or better). No significant trends emerged between bidding levels on high- and low-valued tracts by alternative or traditional bidding systems except in the Atlantic and Alaska regions. In these regions, high-valued tracts offered under alternative systems received about two less bids per tract.

Table 14

Bids per Tract from Small Companies by Tract Value Groups

Region	Tracts equal to or less than $250 per acre		Tracts greater than $250 per acre	
	Traditional	Alternative	Traditional	Alternative
All regions:	1.9	2.0	2.7	2.5
Gulf of Mexico	2.0	2.3	2.6	2.8
Pacific	1.8	1.6	2.5	2.6
Alaska	1.8	2.1	3.1	1.4
Atlantic	1.8	1.6	4.6	2.3

Table 15 shows trends in the number of bids by small companies in the 23 test sales for tracts grouped by water depth. Small companies offer fewer bids on deep water tracts--about one less bid than on shallow water tracts. No major trends emerged between bidding levels under the traditional or alternative systems.

Table 15

Bids per Tract from Small Companies by Water Depth Groups

Region	Tracts in water less than or equal to 200 meters		Tracts in water greater than 200 meters	
	Traditional	Alternative	Traditional	Alternative
All regions:	2.2	2.5	1.6	1.2
Gulf of Mexico	2.2	2.6	1.3	1.2
Pacific	2.8	2.7	1.7	1.6
Alaska	2.0	1.9	-	-
Atlantic	2.3	2.7	1.1	1.1

Trends in the number of bids from small companies per tract for each bidding system tested in the 23 test sales are shown in table 16. For example, tracts offered for lease under the royalty rate bidding system received an average of 3.6 bids from small companies--more than any other bidding system. Overall, the alternative systems, in terms of number of bids per tract from small companies, matched the results of the traditional system.

Table 16

Number of Bids per Tract from Small Companies by Bidding System

Bidding system	Bids per tract for all sales	Bids per tract by region			
		Gulf of Mexico	Pacific	Alaska	Atlantic
Traditional	2.2	2.2	2.0	2.0	2.3
All alternatives:	2.2	2.5	2.0	1.9	1.9
Royalty rate bidding	3.6	6.3	-	2.7	-
One-eighth royalty	1.0	-	-	-	1.0
One-third royalty	3.4	2.9	2.1	-	5.6
Fixed net profit share	1.3	1.5	-	1.0	1.0
Sliding scale:					
Formula 1	2.2	2.9	-	-	1.2
Formula 2	2.2	2.5	1.2	1.4	-
Formula 3	2.0	-	-	-	2.0
Formula 4	2.6	2.6	-	-	-
Formula 5	1.0	-	-	1.0	-
Formula 6	2.6	-	2.6	-	-

REVENUE TRENDS

Trends in bonuses per acre leased from 1970 through 1981 are shown in table 17. The largest bonuses were received in 1980 when offshore sales averaged $3,707 per acre leased.

Table 17

Bonus per Acre Leased from 1970 Through 1981

Calendar year	Average bonus per acre for all sales	Average bonus per acre by region			
		Gulf of Mexico	Pacific	Alaska	Atlantic
1970	$1,579	$1,579	$ -	$ -	$ -
1971	2,587	2,587	-	-	-
1972	2,725	2,725	-	-	-
1973	2,985	2,985	-	-	-
1974	2,850	2,850	-	-	-
1975	648	490	1,346	-	-
1976	1,755	1,636	-	1,369	2,130
1977	1,417	1,933	-	787	-
1978	1,362	1,583	-	-	412
1979	2,864	3,889	1,987	5,697	1,461
1980	3,707	4,380	-	551	-
1981	2,861	2,976	5,230	59	1,171

Trends in bonus levels for each bidding system tested in the 23 sales are shown in table 18. For example, bonuses were highest for tracts leased under the sliding scale formula 4 system where the Government received $7,077 per acre leased. Overall, tracts leased under alternative systems averaged about $300 less per acre than the traditional system. For a full 5760 acre tract, this would amount to about $1.7 million less per tract (i.e., financial barriers in obtaining leases under alternative systems, collectively, have been reduced by this amount).

Table 18

Bonus per Acre by Bidding System

Bidding system	Average bonus per acre for all sales	Average bonus per acre by region			
		Gulf of Mexico	Pacific	Alaska	Atlantic
Traditional	$2,590	$2,986	$3,484	$ 988	$1,104
All alternatives:	2,292	2,959	2,558	1,352	1,641
Royalty rate bidding	52	25	-	58	-
One-eighth royalty	1,308	-	-	-	1,308
One-third royalty	5,010	4,311	4,041	-	7,256
Fixed net profit share	1,431	1,829	-	435	993
Sliding scale:					
Formula 1	670	1,812	-	-	385
Formula 2	2,871	2,839	1,418	5,697	-
Formula 3	1,863	-	-	-	1,863
Formula 4	7,077	7,077	-	-	-
Formula 5	34	-	-	34	-
Formula 6	2,759	-	2,759	-	-

EXPLORATION TRENDS

Table 19 shows trends in the average time from lease date to the dates of the first well and production for all bidding systems tested in the 23 sales. For example, a lessee, on the average, drilled the first well 7.4 months after the date of the lease award for tracts leased under the sliding scale formula 4 system. These tracts were also placed in production on the average of 10 months after the lease date. Tracts that were drilled under the alternative systems were drilled on average about 4 months sooner than traditionally leased tracts.

Table 19

Average Time from Lease Date to First Well and First Production by Bidding System
(months)

Bidding system	First well	First production
Traditional	16.8	43.1
All alternatives:	12.5	28.1
Royalty rate bidding	15.1	53.0
One-eighth royalty	-	-
One-third royalty	12.4	55.6
Fixed net profit share	7.7	-
Sliding scale:		
Formula 1	15.7	-
Formula 2	13.4	19.5
Formula 3	23.1	-
Formula 4	7.4	10.0
Formula 5	-	-
Formula 6	9.7	-

Trends in the average time to first wells by region are shown in table 20.

Table 20

Average Time from Lease Date to First Well
(months)

	Time to first well by region			
	Gulf of Mexico	Pacific	Alaska	Atlantic
Traditional tracts leased to:				
Small companies	12.7	31.0	-	24.6
Large companies	16.3	21.2	16.1	27.7
Alternative tracts leased to:				
Small companies	12.8	-	-	-
Large companies	10.9	23.3	15.4	19.7

DESCRIPTION OF OFFSHORE BIDDING SYSTEMS

Every bidding system has some practical shortcomings with no one system emerging as clearly superior to all the others--at least on a theoretical basis. Each system has one or more fixed components and one bid variable component. The fixed components, which are assigned by Interior prior to the lease sale, may be a (1) cash bonus, (2) fixed royalty, (3) sliding scale royalty, (4) fixed work commitment or (4) net profit share rate. The bid variables, upon which the lease is awarded, may be a (1) cash bonus, (2) royalty percentage, (3) work commitment, or (4) net profit share rate. The relationship among these components within the different bidding systems affects, to varying degrees, the

--number of companies placing bids,

--level of competition,

--receipt of revenues,

--development of resources, and

--cost of administration.

Descriptions of each of the offshore bidding systems provided by Government regulation follow.

Cash bonus bid with a fixed royalty rate

Under the cash bonus bid, fixed royalty rate system, companies bid a cash bonus with the royalty rate of production fixed at 12-1/2 percent or greater. The highest cash bonus bid for the tract wins the lease, provided the bid amount exceeds the minimum tract value established by Interior. Also, no bonus bid is considered acceptable unless it is equal to or greater than $150 per acre. The royalty rate, should production occur, was traditionally fixed at 16-2/3 percent of the amount or value of production saved, removed, or sold from the lease. However, Interior also offers leases under 12-1/2 and 33-1/3 percent royalty rates.

The cash bonus bid, fixed royalty rate system has many desirable aspects. It is easy to administer, places a minimum amount of exploration risk on the Government, and provides an immediate income in the form of bonuses to the Government. Also, the use of relatively low, fixed royalty rates allows, based on theory, companies to bid larger cash bonuses without exceeding the projected economic value of the lease. As a result, winning bids under this system should be higher than under most other leasing systems. This also provides an incentive to the lessee to recover its large

bonus investment by exploring and developing the lease. The result, according to one theory, should be a tendency by lessees to develop cash bonus bid, fixed royalty tracts faster than tracts leased under other bidding systems.

The cash bonus bid, fixed royalty rate system, however, has some practical shortcomings. For example, since the system places heavy emphasis on the cash bonus, it may discourage participation by small, independent companies with less access to financial capital and less ability to absorb losses. The result--decreased participation and competition--runs counter to the program's objective of promoting increased competition. On the other hand, a high royalty rate, while lowering bonuses, may result in less than the optimum development of the discovered resources. For example, a royalty represents a negative cash flow in the determination of expected profits from production. Thus, larger royalty rates increase the risk that the lessee will not be able to develop the resources, pay the royalty and other production costs, and still obtain an acceptable rate of return on its investment. The potential result is limited development of resources or forced early termination of production. This conflicts with another objective of the OCS leasing program which is to promote timely and efficient exploration, development, and production of offshore energy resources.

Royalty rate bid
with a fixed cash bonus

Under the royalty rate bidding system, companies submit bids representing the percentage share of production--the royalty rate--that they are willing to pay the Government with the cash bonus payment fixed by Interior at a nominal level. Leases are awarded to the qualified bidder offering the largest share of the value of production for the lease. The cash bonus payment is supposed to be fixed by Interior at a level below the cash bonus bid expected if the lease was offered under the traditional system. Thus, the initial capital requirements of the royalty rate bidding system are less than under the traditional system.

The major theoretical advantage of the royalty rate bidding system is that it encourages greater participation and competition. For example, the reduction in front-end bonus requirements eases the need to raise large amounts of capital to participate in the lease sale. Consequently, small companies could be induced to bid more actively, and new entrants could be encouraged to enter the bidding. Another potentially desirable aspect of this system is that the large sums of money used for bonus bids under other systems can be used to fund exploration and development of the tract.

The royalty rate bidding system, however, has some serious conceptual shortcomings. Since the bidder is not immediately penalized for submitting a very high royalty bid, there is significant danger that a bidder will submit an unrealistically high royalty rate to win a lease. Thus, because royalties have the same effect on profits as production costs, high royalty rates tend to make production less economical for the lessee and could either prevent development of marginal resources discovered or force early termination of production on some leases. In addition, since little up-front money is required, companies can submit high royalty bids just to hold the lease until proven reserves are found in the area before committing funds to development, thereby causing a delay in production. Any of the above results lead to reduced resource recovery and thus to reduced revenues to the Government.

Cash bonus bid
with a sliding scale royalty

The sliding scale royalty system requires a variable cash bonus bid with a fixed sliding scale royalty. For this system, the highest cash bonus bid for the tract wins the lease, provided the bid amount exceeds the minimum tract value established by Interior. The sliding scale royalty system differs from the cash bonus bid with a fixed royalty rate by establishing a royalty rate that increases or decreases with the value level of production within given time frames. The basic premise of the system is that the greater the value of oil produced, the higher the royalty rate.

Six sliding scale formulas have been used by Interior so far under this bidding approach. The specific formulas include:

Formula 1: $R = 15.16667 + V$,
Formula 2: $R = 10(\ln V/2.5)$,
Formula 3: $R = 9(\ln V/2.5)$,
Formula 4: $R = 13(\ln V/3.0)$,
Formula 5: $R = 9(\ln V/3.5)$, and
Formula 6: $R = 11(\ln V/3.25)$.

The V equals the quarterly value of production, adjusted for inflation and R equals the percent royalty that is due and payable on the unadjusted value of production saved, removed, or sold. Also, there are limits for R in each formula. In formula 1, $16\text{-}2/3 \leq R \leq 50$, while in all other formulas, $16\text{-}2/3 \leq R \leq 65$. The symbol "ln" denotes a conversion to logarithms. The impacts of these different formulas are shown below:

	Lowest royalty rate (percent)	Quarterly production value at which the royalty rate begins to increase ($ million)	Highest royalty rate (percent)	Quarterly production value at which the royalty rate tops out ($ million)
Formula 1	16-2/3	$ 1.50	50	$ 34.83
Formula 2	16-2/3	13.24	65	1,662.85
Formula 3	16-2/3	15.93	65	3,423.82
Formula 4	16-2/3	10.81	65	445.24
Formula 5	16-2/3	22.30	65	4,793.35
Formula 6	16-2/3	14.79	65	1,197.21

Theoretically, the sliding scale royalty system should be more attractive than the cash bonus bidding system with a fixed royalty rate. For example, compared to systems with a static royalty rate, the sliding scale system results in the lessee shouldering less of the monetary risk inherent in offshore exploration and development. Since minimal reserves are less economical to develop than large ones, it is to the lessee's advantage that the sliding scale system provides for a low royalty rate at low levels of production. Conversely, the increase in royalty rates at higher production levels allows the Government greater revenues from unexpectedly large discoveries. The theoretical result, in both cases, brings Government revenues more in line with the tract's value and provides more incentives for developing marginal reservoirs and producing declining fields than systems with a static royalty rate. It is also theorized that the sliding scale royalty system, in comparison to the traditional system, reduces the bonus amount bid, which should encourage more companies to participate.

The major disadvantage of the sliding scale system is that it provides incentives to the lessee to reduce or slow production. Since the effective royalty rate, a cost of production to the lessee, increases as the level of production increases, companies may elect to install production equipment with smaller than usual capacity for the reservoir.

Cash bonus bid
with a fixed net profit share

Under the cash bonus bid, fixed net profit share system, the cash bonus is the bid variable, and a fixed share of the lessee's net profits is paid to the Government at the percentage rate

agreed to in the lease. Like all cash bonus bidding systems, the highest qualified cash bid for the tract wins the lease. However, the fixed net profit share system, unlike other systems, makes allowances for the expense the lessee incurs in developing the lease. The lessee first recovers its capital investment and then shares the lease's net profit (oil and gas revenue less operating expense) with the Government at a rate not less than 30 percent.

Interior, in using this system, assigns different capital recovery factors (CRFs) and net profit share rates to different sales. The CRF is the fixed percentage allowance to the lessee for capital expenses which are charged against the net profit share accounts. It is a mechanism for providing the lessee a return on exploration and development expenses incurred prior to production and resulting profits. The net profit share rates establish the percentage of profit to be paid to the Federal Government.

The potential advantages of this system stem from the fact that, if profits are correctly defined and measured, revenues to the Government can be substantially shifted from up-front bonuses to downstream revenues. This could allow more companies to participate in the lease sale. Also, unlike a royalty, which is a unit cost of production, a net profit share can be collected without eliminating all profits from production at any given level. For example, under the fixed net profit share system, a lessee is able to recover expenses of exploration and production from production revenues prior to paying any profit share to the Government. This differs significantly from the fixed royalty system, where contingency payments to the Government begin with the first barrel produced. Thus, the fixed net profit share system makes it possible for lessees to develop reservoirs of marginal commercial value and makes premature abandonment of leases less likely. This system also compensates lessees for large capital investments that are sometimes needed to produce a reservoir or keep it producing.

However, as in other systems, there are potential problems with fixed net profit share leasing. If the net profit share rate is set too high, hydrocarbon recovery may be adversely affected. Conversely, if the rate is too low, the Government will be deprived of revenues, the bonus bid may be driven up, and competition could be reduced. In addition, the complex accounting requirements for this system create administrative workloads for the Government and the lessee.

Net profit share bid
with a fixed cash bonus

Under the profit share bidding system, companies submit bids representing the percentage share of the net profits from production that they are willing to pay to the Government for the lease,

and the up-front cash bonus payment is fixed by Interior at a nominal level. Leases are awarded to the bidder offering the largest percentage share of the future net profits from producing the tract. The cash bonus payment is fixed at a level below the cash bonus bid expected if the lease was offered under the traditional system. Thus, the revenues to the Government are shifted from up-front bonuses to downstream revenues once production occurs.

In theory, this system would produce results and adverse effects similar to those discussed under royalty bidding. While the reduction in front-end bonus requirements should encourage greater participation and competition, this is not expected by Interior to offset the negative effects of overbidding common to both systems. Net profit bidding, for example, has the same high potential for nondevelopment of resources as noted for royalty bidding. In addition, the net profit system requires additional administrative burdens to the Government and lessees that most other bidding systems do not.

Interior has not yet tried the net profit share bidding system in its offshore lease sales.

Work commitment bid with a fixed cash bonus and a fixed royalty

The work commitment bidding system uses a work commitment as the bid variable and requires an initial payment of a fixed cash bonus and a downstream fixed royalty payment. The work commitment variable obligates the lessee to commit in cash or by performance bond the stated bid amount with the work commitment to be recouped by conducting exploration activities on the lease area. For example, the lessee deposits the dollar amount of work committed in a Federal escrow account. As exploration progresses, the Government refunds the lessee's deposit on the basis of a dollar returned for every 2 dollars spent on exploration. If, at the termination of the lease period, the full dollar amount of the work commitment has not been satisfied, the balance left in the escrow account is paid to the Federal Government. The two other elements of payment under this bidding system--the cash bonus and royalty rate--are fixed by Interior at amounts specified in the public notice of the lease sale.

The most obvious benefit of the work commitment bidding system is to expedite exploration by permitting credits for actual expenditures, and thereby forcing exploration activity. With the probability of more funds committed to exploration, it could be reasonable to expect that discovery rates and production times would be accelerated under this system.

Although the work commitment bidding system is designed to reduce front-end costs, thereby decreasing financial barriers for

small companies, it is uncertain whether it would obtain this objective. Under competitive bidding of the work commitment, the cash that would have been paid as a bonus under the traditional system would tend to be converted by companies into the work commitment bid. Thus, a work commitment deposit would place financial strains on small companies very similar to those caused by the high cash bonuses of the traditional system. The result would be a work commitment deposit and a fixed bonus payment, followed by drilling costs that would tend to exceed those expenditures paid by lessees under other bidding systems.

The work commitment bidding system may also have some other negative affects. First, by providing credit to the lessee for actual expenditures, the system creates an incentive for lessees to over spend or over-explore a lease to avoid an escrow payment to the Government. In cases where over-exploration occurs, it could be expected that scarce physical resources (e.g., drilling rigs, drill pipe, etc.) would also be misutilized. Second, total revenues to the Government would be lower under the work commitment bidding system than under the traditional system. In theory, the Government is foregoing cash bonuses for work commitment deposits. Since the system encourages the lessee to continue diligent exploration by providing for partial reductions of the deposit to help finance exploration activities, it is unlikely that the Government would receive payment from these work commitment deposits. On the average, the Government could expect payment from these deposits only where initial exploration was decisively negative. Third, there may be significant administrative costs incurred by Government and lessees associated with the utilization of the work commitment system. For example, the verification of lessee's expenditures applied in satisfaction of the work commitment would be costly and difficult, as would other administrative requirements for this system.

Interior has not yet tried the variable work commitment system in its offshore lease sales.

APPENDIX VI

LISTING OF ALTERNATIVE BIDDING SYSTEMS AND TEST SALES

Bidding system	Sale	Location	Date
Royalty bid, fixed cash bonus	Sale 36	Central Gulf of Mexico	10/16/74
	Sale CI	Lower Cook Inlet	10/27/77
Cash bonus bid, fixed 12-1/2 percent royalty	Sale 56	South Atlantic	08/04/81
	Sale 59	Mid-Atlantic	12/08/81
Cash bonus bid, fixed 33-1/3 percent royalty	Sale 35	Southern California	12/11/75
	Sale 40	Mid-Atlantic	08/17/76
	Sale A62	Central Gulf of Mexico	09/30/80
	Sale 62	Western Gulf of Mexico	11/18/80
	Sale 53	California	05/28/81
Cash bonus bid, sliding scale royalty:			
Sliding scale formula 1	Sale 43	South Atlantic	03/28/78
	Sale 45	Central and Western Gulf of Mexico	04/25/78
Sliding scale formula 2	Sale 65	Eastern Gulf of Mexico	10/31/78
	Sale 51	Central and Western Gulf of Mexico	12/19/78
	Sale 48	California	06/29/79
	Sale 58	Central and Western Gulf of Mexico	07/31/79
	Sale A58	Central and Western Gulf of Mexico	11/27/79
	Sale BF	Beaufort Sea	12/11/79
Sliding scale formula 3	Sale 49	Mid-Atlantic	02/28/79
	Sale 42	North Atlantic	12/18/79
Sliding scale formula 4	Sale A62	Central Gulf of Mexico	09/30/80
	Sale 62	Western Gulf of Mexico	11/18/80

Sliding scale formula 5	Sale 55	Gulf of Alaska	10/21/80
Sliding scale formula 6	Sale 53	California	05/28/81
Cash bonus bid, fixed net profit share	Sale A62	Central Gulf of Mexico	09/30/80
	Sale 55	Gulf of Alaska	10/21/80
	Sale 62	Western Gulf of Mexico	11/18/80
	Sale A66	Central and Western Gulf of Mexico	07/21/81
	Sale 56	South Atlantic	08/04/81
	Sale 60	Lower Cook Inlet	09/29/81
	Sale 66	Central Gulf of Mexico	10/20/81
	Sale 59	Mid-Atlantic	12/08/81

Source: The Department of the Interior.

APPENDIX VII

COMPARATIVE STATISTICS FOR SALES

CONDUCTED IN 1982

Table 1

Bidding Systems Used in 1982 Sales

Sale	Date	Bidding system	Tracts offered	Tracts bid on		Tracts leased	
				Number	Percent	Number	Percent
Gulf of Mexico							
67	02/09/82	Traditional	221	127	57	106	48
		Fixed net profit share	13	10	77	9	69
Total			234	137	59	115	49
Pacific							
68	06/11/82	Traditional	51	28	55	22	43
		One-eighth royalty	89	7	8	7	8
Total			140	35	25	29	21
Atlantic, Pacific, and Alaska							
RS-2 (note a)	08/05/82	Traditional	210	1	(>1)	1	(>1)
		One-eighth royalty	161	21	13	20	12
		Fixed net profit share	166	7	4	6	4
		Sliding scale royalty	17	11	65	9	53
Total			554	40	7	36	6
Alaska							
71	10/13/82	Traditional	213	105	49	102	48
		One-eighth royalty	61	3	5	3	5
		Sliding scale royalty	64	17	27	16	25
Total			338	125	37	121	36
Gulf of Mexico							
69 (note b)	11/17/82	Traditional	122	62	51	52	43
		One-eighth royalty	19	3	16	3	16
		Fixed net profit share	3	3	100	2	67
Total			144	68	47	57	40
Total for all sales			1,410	405	29	358	25

a/Sale RS-2 was a re-offering sale, in which tracts offered recently but not leased were re-offered for leasing.

b/Sale 69 is to be conducted in two separate lease offerings. These statistics include only part 1; part 2 is planned for 1983.

Table 2

Recap of Bidding under Each System

Bidding system	Number of tracts offered	Tracts bid on		Tracts leased	
		Number	Percent	Number	Percent
One-eighth royalty	330	34	10	33	10
Fixed net profit share	182	20	11	17	9
Sliding scale	81	28	35	25	31
All alternative systems	593	82	14	75	13
Traditional system	817	323	40	283	35
All bidding systems	1,410	405	29	358	25

Table 3

Percent of Tracts Offered by Bidding System

Bidding system	Number of tracts offered	Percent of tracts offered
All alternative systems	593	42
Traditional system	817	58
Total	1,410	100

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