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BY THE U.S. GENERAL ACCOUNTING OFFICE

**Report To The Chairman, Subcommittee  
On Oversight And Investigations  
Committee On Energy And Commerce  
House Of Representatives**

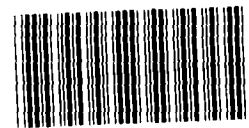
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**Interior Has Taken Steps To Improve  
The Adequacy Of Data Used For Making  
Outer Continental Shelf Leasing Decisions**

GAO examined the Department of the Interior's policies and practices for using geological and geophysical data to evaluate the oil and gas potential and thus the value of offshore lands being leased under the new "area-wide leasing" program.

GAO found that leasing activity increased so greatly in the Gulf of Mexico that Interior did not have time or staff to analyze all the data in its files or to acquire additional data. As a result, many tracts were leased without adequate data to evaluate the resource potential or the adequacy of industry bids.

Interior has taken recent actions to obtain more data or analyze data it already had in order to have better supporting data for making leasing decisions in the Gulf. Additionally, the Gulf region is conducting a mapping program which should help it make technically sound evaluations of resource potential in future sales.



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UNITED STATES GENERAL ACCOUNTING OFFICE  
WASHINGTON, D.C. 20548

RESOURCES, COMMUNITY,  
AND ECONOMIC DEVELOPMENT  
DIVISION

B-215060

The Honorable John D. Dingell  
Chairman, Subcommittee on  
Oversight and Investigations  
Committee on Energy and Commerce  
House of Representatives

Dear Mr. Chairman:

This report, responding to your request of July 23, 1983, addresses the Department of the Interior's policies and practices for the use of geophysical and geological data. We found that the increase in lease activity in the Gulf of Mexico was so great under its new "area-wide leasing" program that Interior did not have time or staff to analyze all the data in its files or to acquire additional data. As a result, many tracts were leased without adequate data to evaluate the resource potential or the adequacy of industry bids. However, because Interior has taken steps to address data problems in recent sales, we are not making recommendations at this time.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of the report. At that time, we will send copies to the Director, Office of Management and Budget; members of Congress; and other interested parties and make copies available to others upon request.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "J. Dexter Peach".

J. Dexter Peach  
Director

Vertical line of text on the left side of the page.

GENERAL ACCOUNTING OFFICE  
REPORT TO THE CHAIRMAN,  
SUBCOMMITTEE ON OVERSIGHT AND  
INVESTIGATIONS, COMMITTEE ON  
ENERGY AND COMMERCE,  
HOUSE OF REPRESENTATIVES

INTERIOR HAS TAKEN STEPS TO  
IMPROVE THE ADEQUACY OF  
DATA USED FOR MAKING OUTER  
CONTINENTAL SHELF LEASING  
DECISION

D I G E S T

The Department of the Interior acquires and analyzes geological and geophysical data to estimate the oil and gas resource potential of offshore tracts and determine whether to accept industry bids for offshore leases. The OCS Lands Act Amendments of 1978 require that companies exploring for and developing offshore oil and gas must provide these data to Interior.

Under its new "area-wide leasing" program, Interior has increased the number and frequency of sales and offered larger offshore areas for lease. Nearly the entire outer continental shelf (OCS)--about 1 billion acres--is being considered for leasing, although the new Secretary has indicated that the pace may be somewhat slackened in the future. In the first 18 months of the program which began in April 1983, 266 million acres have been offered in lease sales, compared with a total of about 62 million acres offered in the previous 28-1/2 years.

Within the Department of the Interior, the Minerals Management Service (MMS) is responsible for day-to-day management of outer continental shelf activities. MMS is divided into four regions--Alaska, Atlantic, Pacific, and Gulf of Mexico.

The Chairman of the Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce, asked GAO to examine the adequacy of Interior's geological and geophysical data. GAO examined the first 10 area-wide sales held through September 1984 and, with assistance of its geologist, reviewed the data used to estimate the resource potential of lands offered for lease in the first two area-wide sales in the Gulf of Mexico region and the first area-wide sale in each of the three other regions. Audit work was conducted between August 1983 and October 1984.

GULF OF MEXICO LEASING  
DECISIONS BASED ON  
INADEQUATE SUPPORTING DATA

The Gulf of Mexico has been the most active OCS leasing region. In the first two Gulf area-wide sales, 1,029 tracts were leased for about \$4.9 billion. Of these tracts, 610 were leased for \$3.2 billion based on supporting data that MMS rated as "poor" and thus inadequate for estimating resource potential and evaluating the adequacy of industry bids. Data ratings are based on the quantity and quality of geological and geophysical data, the presence or absence of maps which analyze the subsurface, and other factors. (See p. 11.)

The adequacy of data was particularly important for those tracts MMS classified as "non-viable"--that is, having too little oil or gas for economical production--because MMS accepts high bids on such tracts without any further analysis. In the first two Gulf area-wide sales, 285 of the 610 tracts with poor supporting data were classified nonviable and leased without further evaluation for \$1.0 billion. Although judged to have too little oil or gas for economical production, GAO noted that some of these tracts attracted multiple bids, indicating that more than one company considered the tracts potentially valuable. For example, 18 of the 285 tracts in the second Gulf area-wide sale that MMS judged nonviable using poor supporting data received at least 3 bids each and were leased for amounts ranging from \$1.0 million to \$14.2 million a tract. (See p. 12.)

GAO's detailed examination of 11 judgmentally selected tracts rated as nonviable in the first two Gulf sales showed that MMS did not use the available data in its files or the data that could have been acquired commercially for 7 of these tracts. Regional MMS officials told GAO that they did not have sufficient time and staff, given Interior's bid acceptance guidelines in effect at the time, to analyze data in MMS files or supplement this with additional data before awarding leases. The Region's Chief of Resource Studies agreed that more and/or better data were available for some of the sale tracts,

both in-house and commercially, than the data that were used. (See pp. 12-13.)

DATA USED FOR OTHER OCS REGIONS  
ARE GENERALLY ADEQUATE

The results of area-wide lease sales have been mixed in the Alaska, Pacific, and Atlantic regions. Large acreages have been offered, but relatively few tracts received bids in the Atlantic and Pacific regions. Because of this, area-wide sales have not added significantly to tract evaluation workloads in these regions and regional staff have been able to acquire and analyze data needed to evaluate each tract prior to leasing. Although GAO found that MMS had not acquired all of the available geophysical data, the data used were sufficiently detailed to evaluate tracts in these regions. (See p. 13.)

In the Alaska region, more tracts have received bids than in the Atlantic or Pacific regions. Although regional MMS officials said they had adequate time and resources to evaluate tracts, MMS rated over one-third of the 180 tracts receiving bids and leased in the first Alaskan area-wide lease sale as having no economic potential for oil and gas production. (See p. 15.)

In GAO's review of five of these tracts, it found that although additional data were available, MMS believed it had sufficient data to evaluate these tracts. Regional MMS officials told GAO that they had examined the available data but decided not to acquire the data because they had sufficient data to evaluate the oil and gas potential. MMS officials said that companies may have interpreted data differently than MMS. (See pp. 15-16.)

Where GAO found that there were additional data that MMS had not used to evaluate the resource potential or value of nonviable tracts, it could not determine what effect this might have had on MMS' bid acceptance decisions because such data were not acquired or subjected to MMS' bid acceptance procedures. Further, for 5 of the 21 tracts GAO evaluated in detail, MMS' bid acceptance procedures allowed the high bid to be accepted without evaluating the tract because MMS determined that there was adequate competition.

ACTIONS TAKEN BY INTERIOR  
TO ENSURE DATA ADEQUACY

MMS recognized that, in some cases, inadequate supporting data were being used to evaluate OCS tracts. In February 1984, MMS' director issued a memorandum clarifying the procedures to be used to ensure thorough tract evaluations. As a result, in the last two Gulf of Mexico area-wide sales, MMS took additional time after bids were received to acquire more data and to analyze existing data further. In the first sale that the new procedures were used, only 4 percent of the tracts were leased based on poor supporting data compared with 59 percent in the first two area-wide Gulf sales before the new procedures. After acquiring and analyzing additional data to evaluate the resource potential and value of tracts in the last two Gulf sales, MMS rejected more bids (12.6 percent) than in earlier Gulf area-wide sales (4.9 percent), suggesting that the results of earlier sales might have been different if better supporting data had been used. (See pp. 17-20.)

In addition, the Gulf region staff are trying to correct data shortcomings by implementing a regional mapping program which will help define areas with oil and gas potential. The Gulf region's Supervisor of Resource Evaluation described this as a critical effort to support area-wide leasing. Few staff are available to work on this program, however, because of the demands of increased leasing activities. (See pp. 20-21.)

Because Interior has taken recent actions to improve the adequacy of supporting data it uses to evaluate OCS tracts, including taking time after bids are received to acquire and analyze additional data, GAO is not making any recommendations at this time.

AGENCY COMMENTS

GAO did not obtain written agency comments on the draft report; however, agency officials were briefed on the report's contents and their comments were incorporated where appropriate.



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ABBREVIATIONS

GAO	General Accounting Office
MMS	Minerals Management Service
OCS	Outer Continental Shelf

## CHAPTER 1

### INTRODUCTION

The Outer Continental Shelf (OCS) is estimated to contain 30 to 60 percent of this nation's undiscovered oil and gas resources. The first three miles offshore belongs to adjacent states, while the area from three miles to two hundred miles is under federal jurisdiction.<sup>1</sup> Leasing of these offshore lands has provided billions of revenue dollars to the Treasury and has served as an important source of supply for this nation's oil and gas. In 1983 alone, about \$9.2 billion in bids, rental, and royalty payments was paid to the Treasury as a result of leasing offshore lands.

To manage the offshore leasing program, the Department of the Interior (Interior) acquires geological and geophysical data<sup>2</sup> from companies exploring and developing offshore oil and gas and use these data to estimate the oil and gas resources contained on offshore tracts.<sup>3</sup> Geological data are obtained from wells and provide information about the characteristics of the different rock layers beneath the earth's surface, helping identify those types of rock necessary for petroleum to be present. If no wells are near a tract, geophysical data become the primary type of data used for oil and gas resource evaluation purposes. Geophysical data are obtained by sending sound (seismic) waves into the earth. By measuring the varying speeds at which these waves are reflected, judgments are made about oil and gas potential. Interpreting these data, however, is complex and subject to differing professional judgments among the oil companies and the government.

### LEGISLATIVE PROVISIONS

The 1953 OCS Lands Act (P.L. 83-212) and its 1978 Amendments (P.L. 95-372) establish the policies for managing the offshore oil and gas leasing program. Under the act, the government must receive fair market value for offshore lands. Geological and geophysical data are used to estimate resource potential and value of tracts receiving bids in lease offerings. Under the 1978 Amendments, companies exploring and developing offshore oil and gas must provide Interior access to these data. Interior then chooses which data to acquire and pays the companies for the costs of processing and reproducing such data.

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<sup>1</sup>Two special cases are Texas and the Gulf Coast of Florida where the first nine miles are under state jurisdiction.

<sup>2</sup>The term "data," as used in this report, refer to both geophysical and geological data.

<sup>3</sup>A tract is usually three miles by three miles and contains 5,760 acres.

FEDERAL RESPONSIBILITIES FOR  
THE OFFSHORE LEASING PROGRAM

Interior has primary responsibility for setting the terms and conditions for acquiring and developing offshore leases. Within Interior, the Minerals Management Service (MMS) is responsible for the day-to-day management of the OCS. MMS issues permits that allow companies to collect geophysical and geological data. MMS selectively acquires these data from the companies to conduct analyses required throughout the leasing process, such as

- locating and mapping geological structures<sup>4</sup> capable of trapping oil and gas,
- assessing the environmental impacts of proposed lease sales, and
- determining the adequacy of bids received at a lease sale.

In July 1982 the Secretary of the Interior announced several changes to the offshore oil and gas leasing program. The new program, called "area-wide leasing," is a significant departure from past leasing initiatives. The program includes (1) an increased number and frequency of sales, (2) more offshore lands offered for lease, (3) larger lease offerings, and (4) changes in administrative procedures designed to accommodate the expanded leasing program. The area-wide program shifted the focus of offshore leasing from offering to lease a limited number of tracts to offering all tracts in a planning area except those tracts deleted for specific concerns or multiple-use conflicts. The current 5-year leasing schedule calls for 41 offerings through June 1987--12 in the Gulf of Mexico, 16 offshore Alaska, 4 off California, 8 in the Atlantic, and 1 reoffering which covers all areas but the Gulf. Nearly the entire OCS--about 1 billion acres--is planned for offering, although only a small percentage is actually expected to be leased. However, in preparing the next 5-year leasing schedule, the new Secretary said that Interior would provide a more measured pace to allow more consultation with state and local governments.

In a 1981 report,<sup>5</sup> we questioned the ability of Interior to accommodate a leasing program that offers more tracts and conducts more sales at a time when appropriations and budgets are being reduced. We also pointed out that Interior had not evaluated all the likely effects of an expanded program.

In this report, we evaluate the adequacy of geophysical and geological data which the government uses to estimate the oil and

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<sup>4</sup>Geological structures are physical arrangements of subsurface rocks that may trap oil and gas.

<sup>5</sup>Pitfalls in Interior's New Accelerated Offshore Leasing Program Require Attention (EMD-82-26, Dec. 18, 1981).

gas potential of OCS lands to be leased. Geological and geophysical data are important for making leasing decisions, and evaluations based on these data are used as inputs for determining whether to accept or reject bids. MMS geologists and geophysicists acquire these data in order to map subsurface horizons that may have oil and gas potential. After the bids are received,<sup>6</sup> MMS analyzes the geological and geophysical data to determine whether the tracts that received bids have economic potential for oil or gas production. Based on these data, MMS estimates the value of the tracts in order to make bid acceptance decisions. (Interior's bid acceptance procedures generally allow it to accept the high bid on the tracts receiving 3 or more bids without having to estimate the tracts' resource potential or value. See chapter 2.)

#### OBJECTIVES, SCOPE, AND METHODOLOGY

This report responds, in part, to a request by the Chairman, Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce, who requested us, among other things, to examine the acquisition, use, and safeguarding of data in the OCS program. We reported on Interior's acquisition of data in a letter to the Chairman, dated November 20, 1984, and on MMS' practices for safeguarding proprietary data in a letter to the Director, MMS, dated May 24, 1984. In this report we discuss the adequacy of supporting geological and geophysical data that MMS used for estimating the resource potential and value of offshore lands. In a separate report, to be issued shortly, we address Interior's bid acceptance procedures and their implications for receipt of fair market value for offshore lands.

We examined the first 10 area-wide sales held through September 30, 1984. For each sale, we looked at the number of tracts receiving bids, MMS' assessment of the supporting information used to estimate tracts' resource potential and value, the extent to which MMS acquired additional data after receiving bids, and the number of tracts actually leased. We judgmentally selected, for detailed case study, tracts from the first two area-wide sales in the Gulf of Mexico and the first area-wide sale in each of the other OCS regions. Because the Gulf region had the most leasing activity of the four regions, we selected 11 tracts for case study there, and a total of 10 more in the three other regions.

We selected tracts for case study that had been bid on by companies, but which MMS had rated "nonviable," that is, those tracts which, based on available geological and/or geophysical data, MMS considered not to contain oil and gas resources or to contain resources too small to be economically produced. We

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<sup>6</sup>In the Gulf of Mexico and Pacific OCS regions, tracts which MMS believes have high potential for oil and gas, because discoveries have been made on adjacent tracts, are identified and evaluated before a lease sale is held.

selected nonviable tracts because MMS accepts any bid above \$150 per acre without further evaluation. Our selection included a cross-section of tracts that were geographically distributed across sale areas, and received varying expressions of industry interest. We did not evaluate all tracts, or even a representative random sample of tracts, which were bid on in sales because of the large amount of time required to analyze each tract.

To determine what data MMS used to evaluate the resource potential and value of tracts receiving bids in OCS area-wide sales, we interviewed regional officials, including Regional Managers; Resource Evaluation Supervisors; Chiefs, Resource Studies; a Geophysical Section Chief; staff geophysicists; and staff geologists. For each tract included in our review, we asked MMS officials to provide us (1) pertinent prospect evaluation folders,<sup>7</sup> (2) companies' plans of exploration, where available, (3) regional, area, and tract-specific geological and geophysical data, and (4) MMS' interpretations and analyses of the tract's geology. With assistance from our geologist, we reviewed the data with MMS officials to determine whether those data provided MMS with sufficient information to identify potential structures on which companies had bid and thus were adequate to evaluate tracts' resource potential and value. We then reviewed permit files and companies' exploration plans, where available, to determine if additional data were available, either in MMS' files, from commercial sources, or from the companies which MMS could have used in making its evaluation.

In cases where we found that there were additional data that MMS did not use to evaluate the resource potential or value of nonviable tracts, we could not determine what effect this might have had on MMS' bid acceptance decisions because such data were not acquired or subjected to MMS' bid acceptance procedures. Further, as discussed in chapter 3, MMS' bid acceptance procedures provide that the high bid can be accepted without tract evaluation when there is adequate competition, as was the case for 5 of the 21 tracts we evaluated.

We reviewed, in detail, the following sales that were held between April 1983 and April 1984.

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<sup>7</sup>Files that summarize MMS' conclusions about the oil and gas potential of a specific subsurface area.

Table 1  
OCS Area-wide Sales Reviewed by GAO

<u>Region</u>	<u>Sale number</u>	<u>Date of sale</u>	<u>Tracts leased</u>		<u>Number of tracts reviewed by GAO</u>
			<u>Number</u>	<u>Bids received (\$000)</u>	
Alaska	83	Apr. 1984	180	624,491	5
Atlantic	76	Apr. 1983	37	68,410	3
Gulf of Mexico	72	May 1983	623	3,367,606	6
	74	Aug. 1983	406	1,501,713	5
Pacific	73	Nov. 1983	8	16,022	2

We conducted our review from August 1983 through October 1984 at MMS headquarters and its four OCS regional offices--the Alaska region in Anchorage, Alaska; the Atlantic region in Vienna, Virginia; the Gulf of Mexico region in Metairie, Louisiana; and the Pacific region in Los Angeles, California. Our review was performed in accordance with generally accepted government auditing standards, except we did not obtain agency comments on this report. However, we did brief agency officials on its contents--including our review methodology and data sources, and incorporated their comments in the report where appropriate.

## CHAPTER 2

### CHANGES BROUGHT ABOUT BY AREA-WIDE LEASING

As a result of the new area-wide leasing program, more acreage has been offered than in all prior leasing programs combined. However, area-wide leasing has required Interior to make many changes in its leasing process, including evaluating the resource potential and value of tracts after, rather than before sales; and modifying its bid acceptance procedures.

#### RATE OF OFFERING AND LEASING OFFSHORE LANDS HAS INCREASED

Since implementation of the area-wide leasing program in 1983, each of MMS' four regional offices--Alaska, Atlantic, Gulf of Mexico and Pacific--has held at least one area-wide sale. Although the area-wide program has increased the overall amount of the OCS offered, this has affected each of the OCS regions quite differently. The largest contrast is between the Gulf of Mexico region, where five area-wide sales have been held and 1,987 tracts leased, and the Pacific region, where the only area-wide sale resulted in leasing eight tracts. Overall, in the first 18 months of the program, 266 million acres have been offered, compared with 62 million acres offered between October 1954 and April 1983, as shown in table 2.

Table 2

Acreage Offered and Leased Pre- and Post-area-wide Sales

	<u>Area-wide sales</u>			<u>Pre-area-wide sales</u>			<u>Total sales</u>		
	<u>Apr. 1983 - Sept. 1984</u>			<u>Oct. 1954 - Apr. 1983</u>					
	<u>Acres</u>	<u>Number</u>	<u>of sales</u>	<u>Acres</u>	<u>Number</u>	<u>of sales</u>	<u>Acres</u>	<u>Number</u>	<u>of Sales</u>
	<u>Offered</u>	<u>Leased</u>		<u>Offered</u>	<u>Leased</u>		<u>Offered</u>	<u>Leased</u>	
<u>OCS region</u>									
Atlantic	43,063,670	273,266	2	8,698,529	2,060,823	8	51,762,199	2,334,089	10
Alaska	35,848,985	2,232,486	2	12,678,923	2,813,559	10	48,527,908	5,046,045	12
Gulf of Mexico	185,863,303	10,461,028	5	35,066,046	16,875,290	46	220,929,349	27,336,318	51
Pacific	768,341	43,799	1	5,827,088	2,381,864	9	6,595,429	2,425,663	10
<u>Total</u>	<u>265,544,299</u>	<u>13,010,579</u>	<u>10</u>	<u>62,270,586</u>	<u>24,131,536</u>	<u>73</u>	<u>327,814,885</u>	<u>37,142,115</u>	<u>83</u>

#### OCS REGIONS ARE DIFFERENT

OCS regions have differing characteristics that affect the need for and availability of geological and geophysical data. Portions of the OCS that have producing wells, such as the Gulf of Mexico and in the Pacific Ocean off southern California, are



called "mature areas" and, substantial data are usually available for analysis. Other lands, including areas off Alaska, California, Oregon, Washington, the East Coast, and the deep waters of the Gulf of Mexico are called "frontier areas" because relatively little data are available and oil and gas potential is largely unknown.

In general, oil and gas production from frontier areas is expensive because of hazardous and sensitive environments, long distances from support bases, and lack of infrastructure. These factors dictate that large amounts of gas and oil must exist to justify economic production. By contrast, in the Gulf of Mexico mature area, many tracts are close to support bases, have existing pipelines and markets, and are in a relatively mild climate, and thus require lesser amounts of oil and gas to justify production.

In its plans to convert to area-wide sales, MMS' OCS Fair Market Value Task Force noted that geographic differences would affect the workload differently for the various OCS regions.<sup>1</sup> MMS predicted that many tracts would be leased in the mature areas, because there are many oil and gas deposits which, although small, are potentially valuable and because commercially producible quantities of oil and gas have been found there in the past. These small deposits must be evaluated by MMS' geologists and geophysicists using the geological data available from nearby tracts and appropriate geophysical data. Accordingly, MMS expected that the data evaluation workload would increase significantly. By contrast, MMS predicted that because only very large oil and gas fields are economically producible in the unproven frontier areas, the Alaska, Atlantic and Pacific regions would be able to identify and evaluate about 85 percent of the tracts which will receive bids before the lease sale. Therefore, the post-sale workload of these regions would not be greatly affected. Furthermore, because there are few, if any, wells in each frontier area, and therefore little or no geological data, MMS anticipated that it would have to rely more heavily on geophysical data.

The results of the area-wide sales held to date are consistent with MMS' predictions. As shown earlier in table 2, the number of acres offered and leased in the Gulf of Mexico--and thus the data analysis workload--substantially exceeded the total acreage offered and leased in the other OCS regions.

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<sup>1</sup>Department of the Interior, Procedures for OCS Bid Adequacy, Mar. 1983.

MMS ADOPTED NEW BID ACCEPTANCE  
PROCEDURES FOR THE AREA-WIDE  
LEASING PROGRAM

Interior's area-wide leasing program is a marked change from its prior tract-selection leasing program. Under the tract-selection program, Interior had offered a limited number of tracts for which industry had expressed interest. Interior then used a detailed engineering and economic cash flow model to generate an estimate of the value of each tract before the lease sale. This value was the primary criterion that Interior used to accept or reject bids. However, the area-wide leasing program required changes in Interior's methodology to assure that fair market value is received by the federal government when accepting bids for OCS leases. Because all tracts in a planning area are offered in area-wide lease sales, Interior decided it was not practicable to evaluate every tract before the lease sale. Instead, Interior adopted post-sale bid acceptance procedures for evaluating only those tracts that receive bids. However, under certain circumstances, leases are awarded to the highest bidder without requiring a detailed evaluation. For example, Interior accepts the highest bid for tracts receiving adequate competition<sup>2</sup> or tracts it considers nonviable without a detailed evaluation if the bid exceeds the \$150 per acre minimum allowable.

Generally, for the remaining tracts rated viable (that is, those considered to contain sufficient oil and gas resources to be economically produced), MMS uses available geological and geophysical data to estimate the potential for oil and gas. These estimates are used in a computer simulation, which considers resource estimates, the cost of oil and gas, costs of recovery, and other factors to arrive at a dollar estimate of each tract's worth. MMS used this value in deciding whether to accept or reject bids.

MMS' experience with the area-wide leasing program led to some further changes in its bid acceptance procedures--implemented with its April 26, 1984, sale in the Gulf of Mexico, as discussed in chapter 4.

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<sup>2</sup>After screening for anomalously low bids, high bids are accepted for all wildcat and proven tracts receiving three or more bids and more than the average number of bids received for viable tracts in the sale. Interior defines an "anomalously low bid" as any bonus bid that is less than one-eighth of the next higher bonus bid. A proven tract is a previously leased tract, whose lease has expired and contains known oil or natural gas reserves, although the volume of reserves may not be known. A wildcat tract is one that has not previously been explored.

## CHAPTER 3

### BETTER DATA COULD HAVE BEEN USED

#### IN EARLY AREA-WIDE SALES

Area-wide leasing has had different effects in each of the OCS regions. In the Gulf of Mexico region, where most lease sales have been held and 1,987 tracts leased, about two-thirds of the leasing decisions have been based on supporting data that MMS classified as "poor" and unacceptable for evaluating resource potential. Nevertheless, MMS leased tracts based on these data because it did not have the time or staff to analyze data in its files or to obtain additional data. In the Atlantic and Pacific regions, relatively few tracts received bids and MMS had the staff and time to evaluate tracts before leasing. In the Alaska region, MMS officials believed they had adequate time and data to evaluate tracts. However, many of these tracts that MMS classified as non-viable received sizeable bids, and we found that additional and more recent data were available which MMS did not acquire. An MMS official said additional data would have been helpful in its interpretation for two of the five Alaskan tracts that we reviewed in detail.

#### QUALITATIVE DATA USED TO EVALUATE TRACTS' RESOURCE POTENTIAL

MMS uses qualitative criteria to rate the supporting data used to evaluate each tract receiving bids in lease sales. Data ratings are based on the quantity and quality of geological and geophysical data, the presence or absence of maps which analyze the subsurface, and other factors. The rating scales differ somewhat among regions; however, in general, MMS considers whether

- geophysical data are modern--i.e., acquired after 1976;
- geophysical data are detailed enough to show structures which might contain oil or gas--geophysical data are generally measured by a tract's seismic grid<sup>1</sup> coverage;
- geologic data, if available, are acquired and analyzed;  
and
- analytic maps of the tract's subsurface are prepared by MMS from geologic and geophysical data.

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<sup>1</sup>The smaller the distance between data collection lines (the "grid"), the more detailed, and better, the coverage. A one by one mile collection grid provides more detailed data than a three by three mile grid.

In frontier areas, few wells have been drilled; therefore, geologic data are very sparse. MMS, therefore, assigned low data quality ratings when evaluating frontier tracts, even if MMS had analyzed all the available data. In these cases, a low rating did not necessarily indicate that MMS or industry could have improved the quality of its supporting data. In order to analyze the adequacy of data used to evaluate tracts in regions other than the Gulf of Mexico, we used criteria developed by those regions.

In its last 2 Gulf of Mexico sales, MMS considered supporting data rated "poor" as unacceptable for evaluating a tract's potential. Although the data rating system was somewhat different for the first 3 Gulf area-wide sales, the regional Chief of Resource Studies agreed that data rated as "poor" in these sales clearly were not adequate for estimating a tract's resource potential or value in developed areas, although they were sometimes adequate for identifying the large structures necessary for commercial production in unexplored, deepwater areas. Accordingly, in this report, inadequate data refers to supporting data that MMS rated as "poor" or lesser quality. (See apps. I and II for the detailed criteria MMS uses to make these ratings.)

LEASING DECISIONS IN THE GULF OF MEXICO  
BASED ON INADEQUATE SUPPORTING DATA

The Gulf of Mexico has been the most active OCS leasing region. The federal government began OCS leasing in the Gulf in 1954 and, as of September 30, 1984, 51 of the 83 OCS sales held were in the Gulf, including five area-wide sales--more than any other region. Area-wide sales have led to large increases in the average number of tracts offered and leased in the Gulf, as shown below.

Table 3  
Increase in Gulf OCS Activity Under the Area-wide Program

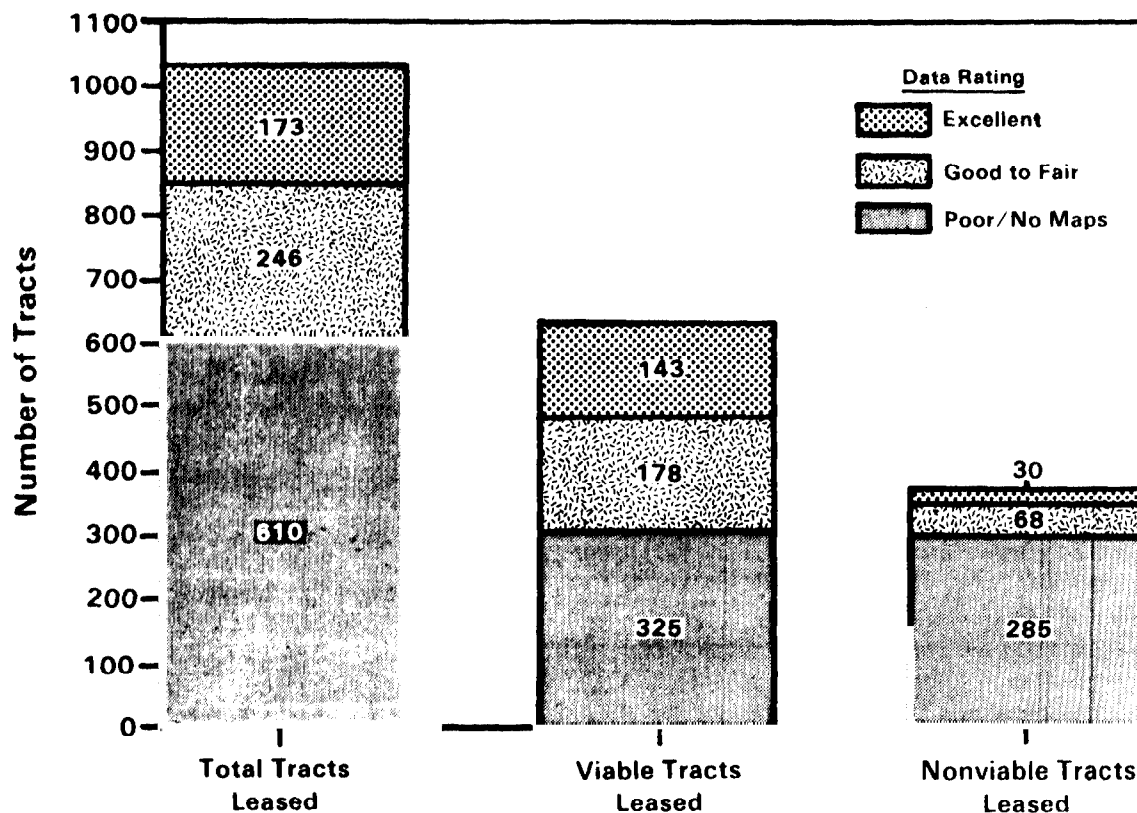
	<u>Area-wide</u>	<u>Pre-area-wide</u>
	(May 1983-Sept. 1984)	(Oct. 1954-Apr. 1983)
Number of sales	5	46
Number of tracts offered	33,714	7,370
Number of tracts leased	1,987	3,551
Average # of tracts offered per sale	6,743	160
Average # of tracts leased per sale	397	77

In its first two Gulf of Mexico area-wide sales that we reviewed (Sale 72, May 1983 and Sale 74, Aug. 1983), 1,029 tracts were leased for about \$4.9 billion. However, 610 of these tracts were leased for about \$3.2 billion based on data that MMS rated as "poor" and thus inadequate for determining the tracts' resource potential and value. MMS classified 285 tracts nonviable based on this poor supporting data and leased them without further evaluation for about \$1.0 billion.<sup>2</sup>

The following chart shows the extent to which viable and nonviable tracts were leased based on poor supporting data.

**Chart 1**

**Data Rating For Tracts Leased in the  
First Two Gulf of Mexico Area-wide Sales**



<sup>2</sup>For 91 of these 285 tracts, MMS had not prepared subsurface maps of the prospective horizon necessary to estimate resource potential and tracts' value. The prospective horizon is a subsurface layer of rock characterized by distinctive geological and/or geophysical features which tend to indicate oil or gas potential.

We found that 18 of the 285 tracts classified as nonviable using poor supporting data received at least three bids, indicating more than one bidder's judgment that the tracts had oil and gas potential. Multiple bids on these tracts, with the high bid for each tract ranging from \$1.0 to \$14.2 million, indicated fairly strong industry interest in sales where there was an average of only 1.6 bids per tract. These 18 tracts classified nonviable were leased for \$99.7 million.

Although MMS had poor supporting data to classify these tracts nonviable, MMS was not required to further evaluate these tracts because its competitive bid acceptance criteria allow it to lease tracts receiving three or more bids without additional evaluation. While under MMS' criteria, these bids would have been accepted regardless of more or better data; these examples illustrate how difficult it is for MMS to estimate a tract's value without adequate data.

Data were available which  
the Gulf Region did not use

Our detailed review of 11 of 285 tracts rated as nonviable based on poor supporting data and leased in the first two Gulf of Mexico area-wide sales, showed that MMS did not use the available data in its files or that data that could have been acquired commercially to upgrade its supporting data. We found that additional data were available for 7 of these 11 tracts either in MMS' files or through commercial sources which MMS did not use. For example, one tract that MMS classified nonviable based on poor supporting data, received six bids with a high bid of \$11.3 million. However, we found additional and/or better geological and geophysical data were available in MMS' files at the time of the sale, but MMS had not used these data to evaluate these tracts.

We also found that MMS had data in its files which indicated that 8 of the 11 tracts judged nonviable might be viable. For example:

- Exploration plans that companies had filed with MMS showed geologic structures with oil and gas potential on 9 of the 11 tracts. We were able to identify 7 of these 9 structures based on data that MMS had in its files but had not used.
- MMS files contained good supporting geologic and geophysical data on one tract. However, MMS had not analyzed this data, which showed a structure with favorable geological conditions for oil and gas. We showed the data to the Region's Chief of Resource Studies who agreed that the structure existed and told us that the prospect might have been mapped if more time had been available.

The Region's Chief of Resource Studies agreed that better data than MMS had used were available for the sale tracts, both in-house and commercially. Although more or better data could have been used to evaluate these tracts, he told us that they did not have enough personnel or time to analyze data in MMS files or to acquire additional data in the 21-day time frame provided for deciding on bid acceptance.

MMS staffing has not kept pace  
with the increased leasing activity

The Gulf region's tract evaluation workload increased from an average of about 160 tracts offered and 77 tracts leased in each sale before area-wide sales to over 6,700 tracts offered and 400 tracts leased in each area-wide lease sale. Although the number of authorized staff increased from 65 as of September 30, 1982, to 66 as of February 4, 1985, the total number of on-board staff responsible for the evaluations decreased from 70 to 63 in this same period.

The Gulf region's Chief of Resource Studies told us that the region is currently trying to fill the three vacancies. He also told us they use other than full-time permanent staff, but these staff are part-time, generally students, who work mainly at filing data, not evaluating tracts. As of February 4, 1985, the Office of Resource Evaluation had four of these part-time staff on board.

The Acting Regional Manager said that the Gulf region's resource evaluation program can not continue to sustain staff reductions because of workload increases caused by record-level area-wide sales, greater demands for resource information, and the increasing number of other projects that require geological and geophysical analysis.

DATA USED BY OTHER OCS  
REGIONS IS GENERALLY ADEQUATE

The results of area-wide sales have been mixed in the Alaska, Pacific, and Atlantic regions. Large acreages have been offered, but relatively few tracts received bids in the Atlantic and Pacific regions. Because of this, area-wide sales have not added significantly to tract evaluation workloads in these regions, and these regions have been able to acquire and analyze data needed to evaluate each tract prior to leasing. In the Atlantic, a regional official attributed the small number of bids to prior unsuccessful exploratory efforts, the high costs associated with exploration in this frontier area, and strong environmental concerns, which have led to the withdrawal of some tracts from the sale area. In the Pacific, regional officials said few bids were received because many of the high potential tracts were withdrawn from the sale because of congressional moratoriums, environmental concerns, and Department of Defense restrictions.

In the Alaska region, more tracts have been leased than in the other frontier regions. Furthermore, we found that companies were making sizable bids on many tracts that MMS rated as non-viable. Unlike the situation in the Gulf, however, a regional official believed they had adequate data to evaluate the tracts, although we found additional and more recent data were available that MMS did not acquire and which might have changed MMS' interpretation, and thus its bid acceptance decisions for two of the five tracts that we reviewed in detail.

#### Few tracts leased in the Atlantic and Pacific regions

Only a small number of tracts received bids in the first two area-wide sales held in the Atlantic and Pacific regions. Consequently, area-wide leasing has had little effect so far on the ability of these regions to acquire and analyze data before making lease decisions.

We reviewed the Atlantic Region's first area-wide sale held in April 1983. The sale offered 4,050 tracts, of which only 40 received bids. We reviewed the three nonviable tracts which received bids in the sale. In the Pacific Region, we reviewed the November 1983 area-wide sale which offered 137 tracts, of which only 8 received bids and reviewed the two tracts that MMS classified nonviable.

We found that although MMS had not acquired all of the data that were available for the tracts we evaluated,

- geophysical data used by MMS were modern, most of the data having been collected in 1979 or later;
- geophysical data were detailed enough to show structures that might contain oil or gas;
- MMS acquired and analyzed available geological data; and
- MMS had prepared maps from geological and geophysical data for the subsurface horizons which it considered to have oil or gas potential.



MMS and industry differ on  
the value of Alaskan tracts

MMS officials believed they had sufficient data to evaluate tracts in Alaska's first area-wide sale, which was held in April 1984 and offered 5,036 tracts. However, MMS judged about one-third of the 180 tracts leased in this sale as nonviable.<sup>3</sup> For the five tracts we reviewed, MMS regional officials believed the geophysical data used were sufficient to evaluate the resource potential; however, additional data were available, some of which were more recent than used by MMS, but were not acquired by MMS. MMS officials said the data had not been acquired because after reviewing the available data, they did not believe the data would add to its evaluation. However, MMS officials agreed with our geologist that additional or better data would have been helpful in its interpretation of the resource potential for two of the five tracts, but that only drilling would prove whether industry or MMS was most correct.

Alaska's Regional Supervisor of Resource Evaluation said that regional staff had been able to acquire the data needed and do most of the necessary data analysis (including subsurface mapping) before the sale was held. He said that it was possible to do this before the sale because MMS identified a few large prospects in the sale area and concentrated on evaluating them.

For the overall sale, MMS rated 68 of the 180 tracts leased (38 percent) as nonviable. The \$204.0 million bid for these tracts represented 33 percent of the \$624.5 million received for the leased tracts. Similarly, in the Alaska area-wide sale, held in August 1984, MMS judged 179 of the 231 tracts leased (77 percent) as nonviable. The \$524.0 million bid on these nonviable tracts constituted 60 percent of the total \$877.1 bid for the tracts leased.

We reviewed five nonviable tracts that received bids in the first sale and found that

- geophysical (seismic) data used by MMS were modern (none of the data used preceded 1976) and, in all but one case, were as or more detailed than the two mile by two mile grid which the Alaska region considers appropriate for identifying structures in this region;
- the geological data which were available in MMS' files had been analyzed and used by MMS; and

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<sup>3</sup>Bids were accepted on 180 tracts; however, MMS told us that leases were not issued on 17 of these tracts at the time of our review, pending resolution of border disagreements between the United States and Russia.

--maps had been prepared by MMS staff for the subsurface horizons which MMS considered to have oil or gas potential.

MMS characterized the geophysical data covering sale tracts as sufficient to identify structures. However, because there was only one well in the sale area, the limited geological data made it difficult to estimate oil and gas potential.

Although our tract-specific review concluded that MMS had enough data for four of the five tracts to meet its standard for a frontier area, we found that additional data were available for all five of the tracts we reviewed and that MMS had acquired less than half of the total data that were available (55 of the 124 line-miles of data available). Furthermore, the data MMS had in its files were collected in 1976-82, whereas the data that MMS had not acquired were collected in 1981-83. This additional data could have caused MMS to estimate the resource potential and value of some tracts differently and thereby changed its bid acceptance decisions.

We asked MMS officials why companies were bidding on tracts that MMS had judged nonviable and whether the large amount of data that MMS had not acquired was a reason for the difference in MMS' and industry's valuation of these tracts. MMS officials said that they were also concerned about the large differences between their evaluation of tracts in the last two Alaska lease sales and companies' bids. MMS officials told us they had reviewed all the available geophysical data, but believed it did not add to MMS' evaluation and therefore had not purchased the data. MMS' Regional Supervisor, Resource Evaluation Division, said that companies may have interpreted geological data different from MMS for assessing the potential of oil and gas on these tracts. Although MMS officials said that the tracts did have potential oil and gas structures, they believed the structures were in rocks unfavorable for commercial production of oil and gas.

## CHAPTER 4

### ACTIONS TAKEN TO ENSURE THAT ADEQUATE

#### DATA ARE AVAILABLE TO EVALUATE OIL AND

#### GAS POTENTIAL IN FUTURE SALES

MMS officials recognized that in some cases, inadequate supporting data were being used to evaluate OCS tracts and changed its procedures to help improve the adequacy of data used for evaluating tracts. These changes were implemented in the Gulf of Mexico sale held April 24, 1984--the eighth area-wide sale. MMS took additional time after the sale to obtain more data or analyze data it already had in order to upgrade the quality of supporting data used to make bid acceptance decisions. Based on the upgraded data, MMS rejected about twice as many bids as in previous Gulf area-wide sales. Additionally, the Gulf region has a regional mapping program underway which, when completed, should help Gulf staff make technically sound resource potential evaluations for future area-wide lease offerings.

#### REGIONS DIRECTED TO THOROUGHLY EVALUATE TRACTS

During our review, MMS revised its procedures for classifying tracts when there are no data or inadequate maps. Interior regulations provide that MMS has up to 90 days after the date on which bids are opened to accept the highest bid for a lease. However, as part of its area-wide sale procedures, MMS established a shorter bid acceptance time frame. These more stringent guidelines, adopted by the Secretary of the Interior on February 22, 1983, called for (1) accepting bids on tracts judged nonviable within 3 days of the sale and (2) completing all bid acceptance decisions within 3 weeks of the sale. However, on February 28, 1984, because of concern that there were insufficient time and resources to determine the viability of each tract in this time-frame, the Director, MMS, directed that tracts would be classified nonviable only when there were sufficient data to support this determination. Regions were instructed that additional data analysis can be undertaken after bids were received and they were to ensure that tracts are thoroughly evaluated. In this regard, he emphasized that the 3-week guideline for bid acceptance was to be considered only a guideline and that regional managers should extend this period when necessary.

The fourth Gulf of Mexico area-wide sale (Sale 81), held April 24, 1984, was the first sale held in the Gulf Region after the director's memorandum. Starting with this sale, the Gulf Region changed its data rating system. The new system utilized four rating categories--excellent, good, fair, and poor--rather than the three categories which had been used for preceding sales. (See app. II for detailed criteria used by MMS for these ratings.)

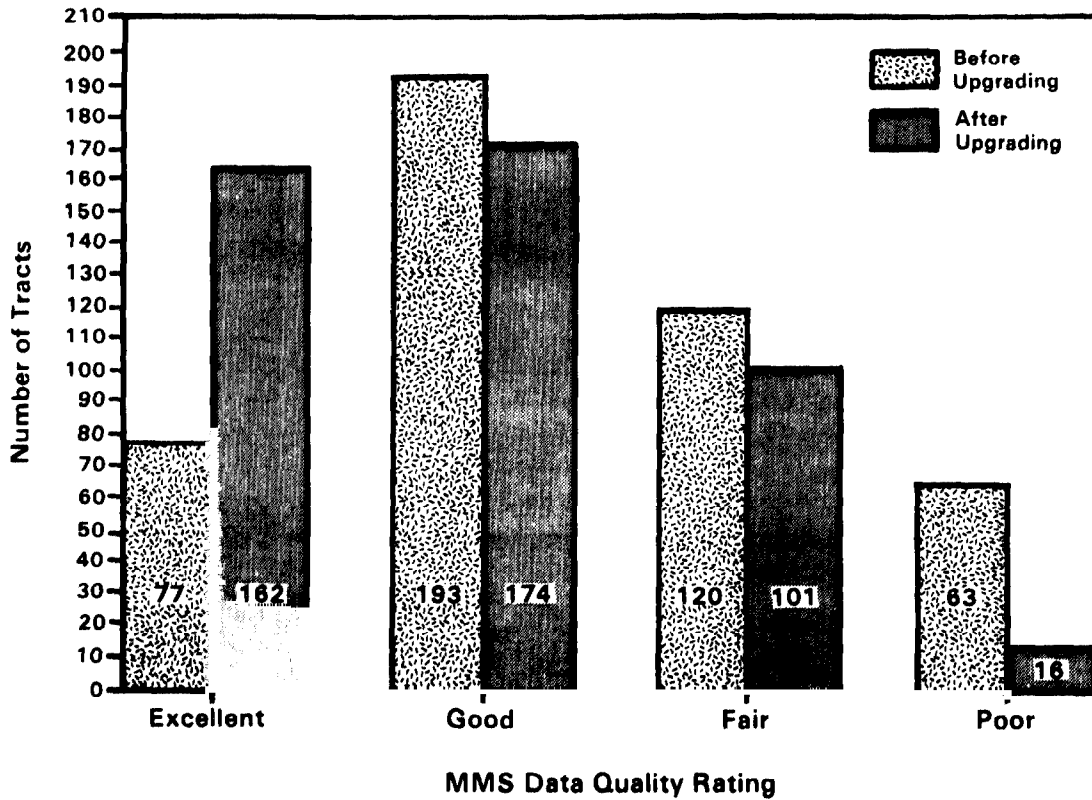
For this sale, MMS took additional time to upgrade data on tracts receiving bids. Instead of accepting or rejecting all bids within 3 weeks, as in prior area-wide sales, the region used nearly 60 days for Sale 81. The region acquired about 167 additional line-miles of seismic data and did additional analyses. Altogether, 41 staff spent about 13,500 hours, including 450 hours of overtime, evaluating the tracts receiving bids. As a result, the data quality ratings were upgraded for 127 of the 529 tracts receiving bids and 453 tracts were leased. For the 72 tracts initially rated as having poor supporting data, the Gulf Region:

- Upgraded poor supporting data for 56 tracts. The upgrade was to an excellent (A) rating on 53 and to a good (B) rating on 3 tracts. After the data were upgraded, bids were accepted on 47 of these tracts and rejected on 9. The bids were rejected because they were not equal to or greater than the dollar value which MMS estimated the tracts were worth.
- Accepted bids on 8 of the remaining 16 tracts without upgrading data, because they met the bid criterion for adequate competition.
- Accepted bids on eight tracts initially classified non-viable without upgrading data. The Region's Chief of Resource Studies said that even though the geophysical supporting data were scarce or unacceptable for evaluating tracts' potential, regional staff had sufficient knowledge of geologic data to rate the tracts nonviable and accept bids.

As shown in the following chart, although 72 of the 529 tracts receiving bids in Sale 81 initially had poor supporting data, only 16 of the 453 tracts (4 percent) were leased based on poor data. This compares with 59 percent under the first two area-wide sales.

Chart 2

**Results of Upgrading Supporting Data in Sale 81  
(April 1984)**



Also, in contrast to earlier area-wide Gulf sales, more bids were rejected in lease sales where MMS had better data as a result of the director's February 1984 memorandum, as shown in table 4.

Table 4

Tracts Rejected in Gulf of Mexico Area-wide Sales

<u>Sale date</u>	<u>Sale number</u>	<u>Tracts bid on</u>	<u>Bids rejected</u>	<u>Percent rejected</u>
May 1983	72	656	33	5.0
Aug. 1983	74	436	28	6.4
Jan. 1984	79	156	0	0.0
Apr. 1984	81	529	76	14.4
Jul. 1984	84	<u>402</u>	<u>41</u>	<u>10.2</u>
Total		<u>2,179</u>	<u>178</u>	<u>8.2</u>

The higher bid rejection rate in the last two sales where additional time was taken to upgrade data suggests that the results of earlier sales might have been different if better supporting data had been used.

ADEQUACY OF DATA FOR FUTURE  
AREA-WIDE SALES UNCERTAIN

Although MMS made changes in its post-sale evaluation of tracts starting with the fourth Gulf area-wide sale, concerns remain about the ability of MMS to have adequate data to evaluate tracts in future sales. The large number of tracts receiving bids in Gulf area-wide sales creates a large tract evaluation workload which must be completed in a limited time period. The additional time spent by Gulf staff to acquire additional data, or analyze data from its files after a sale, has taken away from efforts to systematically improve overall data adequacy. Other regions, however, have not yet experienced the increased tract evaluation workload resulting from area-wide sales because fewer tracts have received bids.

According to the Gulf Region's Chief of Resource Studies, the additional time spent acquiring additional data and analyzing data from regional files for Sale 81 delayed work that would have been done preparing for the next sale. He expected that the delayed work would add to the time required to evaluate tracts after subsequent lease sales. In fact, bid acceptance for the next sale took almost the full 90 days allowed by regulation.

The Gulf's Regional Supervisor of Resource Evaluation said that the mature areas in the Gulf have been continuously developed and that prior mapping efforts have become outdated. Therefore, in October 1983 the region established a regional mapping program. Because recent bids were based on industry's evaluation of structures which are smaller, less clearly defined, and often

found in deeper waters, regional maps must be continually updated with new geological and geophysical data. The program is described by the Regional Supervisor of Resource Evaluation as a critical effort needed to support area-wide leasing. Program objectives include developing regional maps and other analyses to define, in detail, areas with oil and gas potential. This would help Gulf staff make technically sound evaluations of area-wide lease offerings. An executive of one of the major oil companies involved in bidding for offshore leases also said that regional mapping was one of the first things his company did with the advent of the area-wide leasing program.

The Regional Supervisor initially assigned permanent teams of geologists and geophysicists to map specific areas in the western and central Gulf of Mexico. Altogether, about 41 staff were assigned to work on the project. However, during post-sale evaluation of tracts which received bids in the July 1984 area-wide sale, only five or six people were working on the program. Gulf region officials told us that the number of people working on the program was dependent on the lease sale schedule. Although Gulf region officials estimated the program would be completed by about October 1986, the Gulf region plans to hold five more area-wide sales during this time.

We discussed several options with the Director, MMS, for ensuring that adequate data are used when making leasing decisions, including

- assigning additional staff to the Gulf of Mexico region,
- contracting for data analysis with commercial firms,
- changing regulations to allow more time for bid acceptance decisions to be made after a sale is held,
- reducing the number of future sales or number of tracts offered in the Gulf region, and
- reducing the frequency of sales of the Gulf region.

The director stated that the agency would continue to upgrade data on tracts after bids are received. He said he did not expect future sales to be as large and burdensome as the first Gulf of Mexico area-wide sales. Future sales, he said, will largely be reoffering tracts that were not leased in previous sales. The director expected that future post-sale data upgrading would not require as much time and staff effort and would remain within the capacity of existing Gulf region staff; however, he said he would consider the measures mentioned above--other than reducing the number or frequency of sales or number of tracts offered in individual sales--if unexpectedly large sales created a workload that the regional staff could not handle.

DATA RATINGS USED FOR SALES 72, 74, AND 79  
IN THE GULF OF MEXICO REGION<sup>1</sup>

<u>Data rating</u>	<u>Description</u>
A	<p><u>Excellent Supporting Information</u></p> <ol style="list-style-type: none"> <li>1. Seismic control 1 X 1 mile or closer.</li> <li>2. Seismic data quality fair to good.</li> <li>3. Detailed map(s) on prospective horizon(s).</li> <li>4. Definitive well log control<sup>2</sup> on prospect or adjacent block(s).</li> </ol>
B	<p><u>Good to Fair Supporting Information</u></p> <ol style="list-style-type: none"> <li>1. Seismic control at least 2 X 2 miles in developed areas and 3 X 3 miles in frontier areas.</li> <li>2. Seismic data quality at least fair to poor.</li> <li>3. Adequate map(s) at or near prospective horizon(s).</li> <li>4. Adequate well control to extrapolate stratigraphic conditions and net effective pay thickness.</li> </ol>
C	<p><u>Poor Supporting Information</u></p> <ol style="list-style-type: none"> <li>1. Seismic control grid larger than 3 X 3 miles.</li> <li>2. Seismic data quality poor to very poor.</li> <li>3. Prospect, regional, or contractor's map(s) not on or near prospective horizon.</li> <li>4. Sparse well control only.</li> </ol>

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<sup>1</sup>These were the first three area-wide sales held in the Gulf of Mexico. Sale 72 was held May 25, 1983, Sale 74 was held August 24, 1983, and Sale 79 was held January 5, 1984.

<sup>2</sup>Well control refers to the availability of data from a nearby well(s) which can be used to interpret the geology of the subject tract.



REVISED DATA RATINGS USED FOR  
SALES 81 AND 84 IN THE GULF OF MEXICO REGION<sup>1</sup>

<u>Data rating</u>	<u>Description</u>
A	<p><u>Excellent Supporting Information:</u></p> <p>Geological and/or geophysical interpretation of adequate quality and grid pattern to define and support the evaluation of the prospect in the area of consideration.</p>
B	<p><u>Good Supporting Information:</u></p> <p>Geological and/or geophysical interpretation of adequate quality and grid pattern to define the regional or trend exploration play(s) in support of the prospect evaluation in the area of consideration.</p>
C	<p><u>Fair Supporting Information:</u></p> <p>Geophysical and/or geological grid adequate to define wildcat plays in frontier areas. Poor definition of prospects in developed areas.</p>
D	<p><u>Poor Supporting Information:</u></p> <p>Current geophysical and/or geological data scarce and/or unacceptable for evaluating tracts potential.</p>

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<sup>1</sup>These are the two most recent area-wide sales held in the Gulf of Mexico. Sale 81 was held April 24, 1984, and Sale 84 was held July 1984.

SUMMARY OF SAMPLE TRACT INFORMATIONFOR GULF OF MEXICO OCS REGIONSALES 72 AND 74

<u>Tract</u>	<u>Seismic data</u>		<u>Well Control</u>		<u>Prospective horizons mapped</u>	<u>Structure apparent on MMS data</u>	<u>Structure shown on company exploration plan<sup>a</sup></u>
	<u>Grid size used by MMS (miles)</u>	<u>Available grid size (miles)</u>	<u>Available</u>	<u>Used</u>			
A	1 X 1	1 X 1	Yes	Yes	Yes	Yes	Yes
B	2 X 2	1 X 1 1/4	Yes	Yes	No	Yes	Yes
C	1 1/2 X 1 1/2	1 1/2 X 1 1/2	Yes	Yes	No	Yes	Yes
D	2 X 6	2 X 6	No	No	No	No	Yes
E	2 X 2	1 X 2	Yes	Yes	Yes	No	Yes
F	2 X 2	2 X 2	Yes	Yes	No	No	No
G	2 X 2	1 1/2 X 1	Yes	Yes	Yes	Yes	Yes
H	2 X 2	1 X 1	Yes	Yes	No	Yes	Yes
I	2 X 2	1 X 1	Yes	No	No	Yes	Yes
J	2 X 2	1 1/2 X 1 1/5	Yes	Yes	No	Yes	Yes
K	2 1/4 X 3	2 1/4 X 1 1/2	Yes	Yes	No	No	(b)

<sup>a</sup>Geophysical support varied among companies' exploration plans.

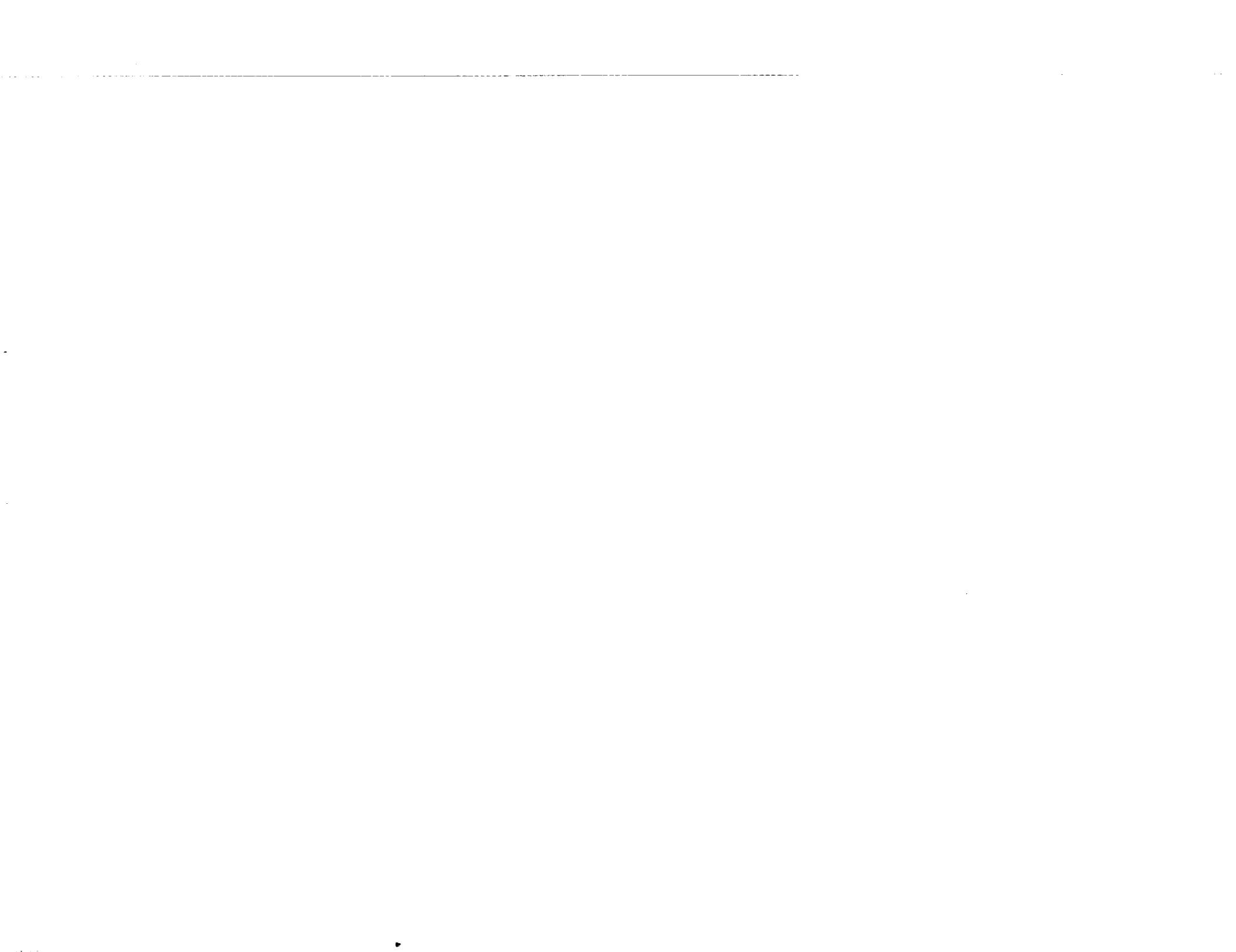
<sup>b</sup>No exploration plan submitted for this tract.

SUMMARY OF DATA AVAILABLE IN MMS FILES FOR  
SAMPLE TRACTS IN THE ALASKA, ATLANTIC AND  
PACIFIC OCS REGIONS

Region/ Sale #	Tract	Seismic data				Well control		Prospective horizons mapped
		Used by MMS		Available		Available	Used	
		Grid size (miles)/ line-miles	Age	Grid size (miles)/ line-miles	Age			
Alaska 83	A	1 X 1 1/2 11	1976-82	1/2 X 1 30	1981-83	Yes	Yes	Yes
	B	1 X 2 10	1978-81	1 X 1 1/2 25	1981-83	Yes	Yes	Yes
	C	1 X 1 3/4 8	1978-82	1 X 1 30	1981-83	Yes	Yes	Yes
	D	2 X 2 1/2 12	1977-82	3/4 X 1 3/4 20	1981-83	Yes	Yes	Yes
	E	2 X 2 14	1980-82	1 1/2 X 2 19	1981-83	Yes	Yes	Yes
Atlantic 76	A	1 X 2 13	1979-82	<sup>a</sup> 16	<sup>a</sup>	Yes	Yes	Yes
	B	1 X 2 15	1981-82	<sup>a</sup> 18	<sup>a</sup>	Yes	Yes	Yes
	C	3/4 X 1 24	1976-82	<sup>a</sup> 49	<sup>a</sup>	Yes	Yes	Yes
Pacific 73	A	3 X 1 1/2 5	1979-83	<sup>c</sup> 25	1979-83	Yes	Yes	Yes
	B	1 X 1 1/3 21	<sup>b</sup>	<sup>c</sup> 21	1979-83	Yes	Yes	Yes

<sup>a</sup>Information on grid size and age of date not available.  
<sup>b</sup>Seismic data mostly 1979-1983, but some was prior to 1979.  
<sup>c</sup>Information on grid size not available.





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