

GAO

Report to the Chairman, Committee on
Governmental Affairs, U.S. Senate

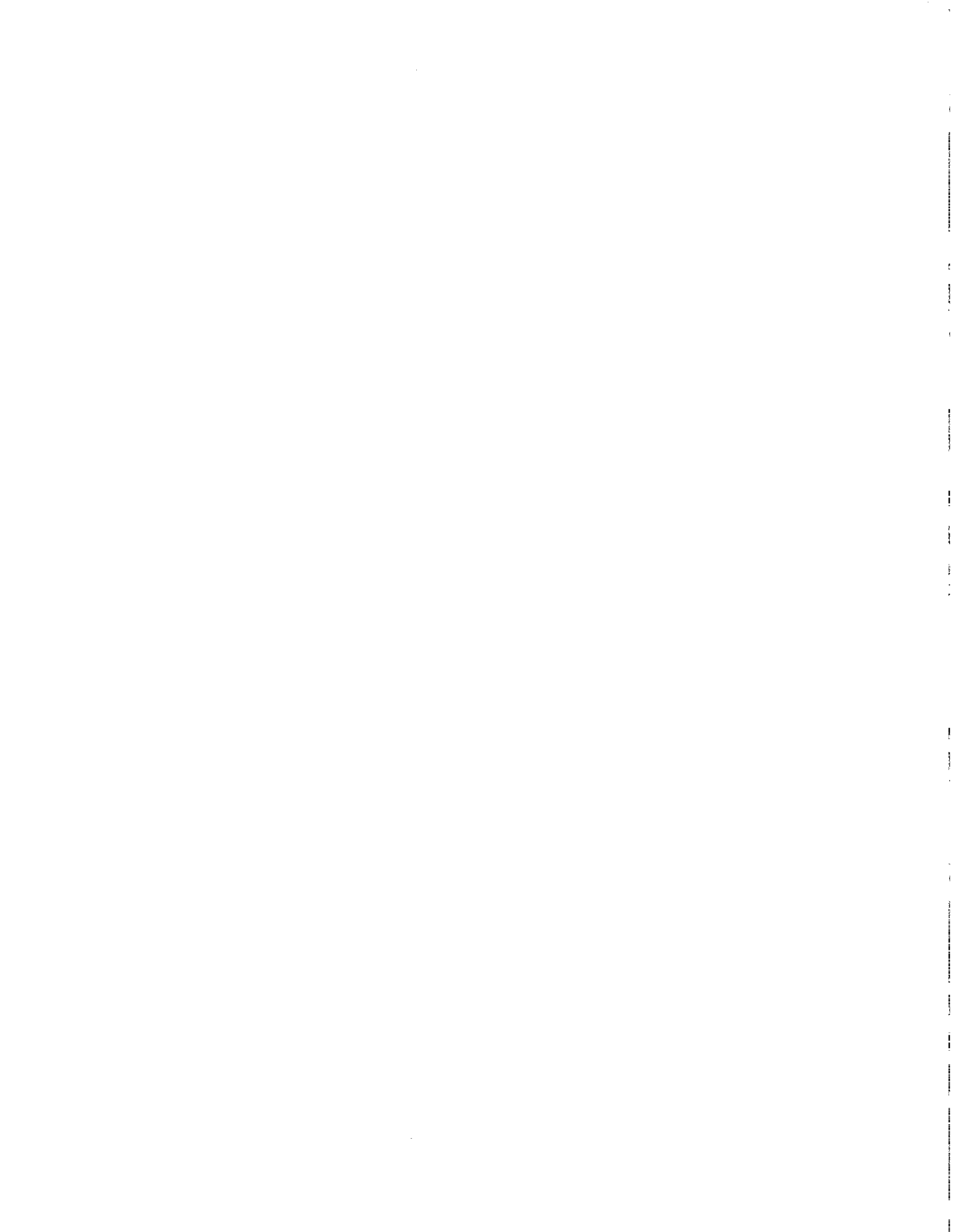
May 1994

OFFSHORE OIL AND GAS RESOURCES

Interior Can Improve Its Management of Lease Abandonment



**RESTRICTED--Not to be released outside the
General Accounting Office unless specifically
approved by the Office of Congressional
Relations. RELEASED**





United States
General Accounting Office
Washington, D.C. 20548

**Resources, Community, and
Economic Development Division**

B-255788

May 11, 1994

The Honorable John Glenn
Chairman, Committee on Governmental Affairs
United States Senate

Dear Mr. Chairman:

In response to your request, this report discusses (1) actions taken by the Department of the Interior's Minerals Management Service to minimize the environmental impact of the abandonment of federal oil and gas leases on the Outer Continental Shelf and (2) the estimated costs of lease abandonment and the Minerals Management Service's approach for ensuring that the government is not burdened with these costs. We focused our review on the Gulf of Mexico because almost all offshore oil and gas structures on federal leases are located there.

As agreed 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 this letter. At that time, we will send copies to the Secretary of the Interior and other interested parties. We will make copies available to others on request.

This work was performed under the direction of James Duffus III, Director, Natural Resources Management Issues, who can be reached at (202) 512-7756 if you or your staff have any questions. Major contributors to this report are listed in appendix III.

Sincerely yours,

Keith O. Fultz
Assistant Comptroller General

Executive Summary

Purpose

When oil and gas production from a federal lease on the Outer Continental Shelf (OCS) ends, the Department of the Interior's Minerals Management Service (MMS) is responsible for ensuring that the parties responsible for the lease bear the costs of abandoning the leased area. Lease abandonment includes plugging and abandoning wells, removing structures, and clearing lease sites, all of which must be done in a manner that prevents unreasonable harm to marine life and the environment. In response to a request from the Chairman, Senate Committee on Governmental Affairs, this report discusses (1) MMS' actions to minimize the environmental impact of lease abandonment and (2) the estimated costs of lease abandonment and MMS' approach for ensuring that the government is not burdened with these costs. The report focuses on MMS' actions in the Gulf of Mexico because almost all OCS oil and gas structures are located there.

Background

As of December 1993, there were about 3,800 OCS oil and gas structures, virtually all of which were located in the Gulf of Mexico. These structures vary in size and complexity, and costs for lease abandonment range from about \$50,000 to \$100 million per structure, depending on the size of the structure and the depth of the water in which the structure is located. If the responsible parties do not properly abandon leases, the federal government may have to incur these costs. For many years, more structures were installed each year than removed. However, in 1992 and 1993, a total of 343 structures were removed and 195 installed, all in the Gulf of Mexico.

OCS oil and gas structures are removed most often by using underwater explosives to shear the portions of the structures that extend to the ocean's floor. Explosives kill nearby fish and can kill marine mammals and endangered sea turtles if they are in the vicinity of the structure being removed.

Among the purposes of the Outer Continental Shelf Lands Act are (1) balancing resource development with protection of the environment and (2) encouraging the development of new and improved technology that will eliminate or minimize the risk of damage to the environment. Under other laws, including the Endangered Species Act, the Department of the Interior and the Department of Commerce's National Marine Fisheries Service are responsible for protecting the environment and marine life.

As part of MMS' approach for protecting the environment and ensuring that the government is not burdened with lease abandonment costs, it is important that the agency ensure that wells are properly plugged and abandoned and lease sites cleared. If these tasks are done properly in the first place, it is less likely that future problems will occur that may damage the environment and cause the government to incur costs.

Results in Brief

MMS has acted to protect the environment by (1) limiting the use of explosives in order to protect endangered sea turtles and (2) requiring that wells be plugged and lease sites cleared. However, MMS has not encouraged the development of nonexplosive structure removal technologies that would eliminate or minimize environmental damage. In addition, MMS does not have an overall inspection strategy that targets its limited resources to adequately ensure that wells are properly plugged and abandoned and that lease sites are properly cleared.

At the time of GAO's review, MMS was not required to pay any lease abandonment costs if responsible parties had failed to do so. MMS has a workable approach for protecting the government from incurring lease abandonment costs, consisting of requiring a general bond for all leases and supplemental bonds in the amount of the total estimated costs of lease abandonment for leases without at least one party deemed financially capable. However, prior to November 1993, the criteria that MMS had been using to assess the financial capability of the parties responsible for OCS leases may not have adequately measured a company's ability to pay for the potentially significant costs of lease abandonment. As of March 1993, Gulf of Mexico leases having \$4.4 billion worth of estimated lease abandonment costs were covered by only \$68 million in bonds. In August 1993, MMS promulgated new regulations that changed those criteria and increased the amounts of the general bonds that the parties responsible for OCS leases are required to provide.¹ However, both of these changes are to be phased in without a deadline for completion. For example, the new general bond amounts will only be required when a change occurs in lease activity or ownership. Therefore, implementing the new coverage may take some time, and some leases may never have the new coverage. In the meantime, the federal government may be at risk for lease abandonment costs that exceed bond coverage.

¹These regulations became effective November 26, 1993.

Principal Findings

MMS Could Do More to Protect the Environment From the Effects of OCS Oil and Gas Lease Abandonment

To protect the environment, MMS and the National Marine Fisheries Service, which is responsible for protecting marine endangered species, formally agreed on measures for protecting endangered sea turtles when underwater explosives are used to remove OCS structures. These measures limit the amount of explosives that may be used without specific approval. Furthermore, MMS requires that lease sites be verified as having been cleared.

However, MMS has not adequately studied the costs and benefits of using nonexplosive technology that would eliminate or minimize the risk of environmental damage from removing OCS structures. Certain actions by MMS may actually encourage the use of explosives. For example, in 1993, MMS proposed relaxing the limits on the use of explosives without having adequately documented the need for larger explosive charges or the probability of harmful effects on marine life. Several oil and gas company representatives told us that if MMS encouraged or required the use of nonexplosive removal methods, companies would further develop this technology.

In addition, MMS does not have an overall inspection strategy for targeting its limited resources to ensuring that wells are properly plugged and abandoned. If wells are not properly plugged and abandoned, leaks can occur after a lease site has been abandoned, causing serious damage to the environment and marine life. MMS has only about 50 technicians in the Gulf of Mexico Region to inspect about 3,800 OCS facilities, and they generally inspect well plugging only when it happens to coincide with other inspections.

Furthermore, MMS' inspection strategy does not adequately ensure that OCS oil and gas lease sites are cleared. For leases in water less than 300 feet deep, MMS requires the responsible parties to hire trawlers to verify that the sites have been properly cleared. However, MMS does not control the hiring of trawlers or independently verify that sites have been properly cleared.

MMS Is Improving How It Protects the Government From Incurring OCS Oil and Gas Lease Abandonment Costs, but More Could Be Done

To guarantee that parties responsible for lease abandonment costs bear those costs, MMS requires that OCS leases be covered by surety bonds.² At a minimum, every lease must be covered by a general bond in a fixed amount. Since May 1992, MMS has required that any lease that does not have at least one party that is financially capable of fulfilling lease abandonment obligations be covered by a supplemental bond in the full amount of the estimated lease abandonment costs. Lease abandonment costs range from about \$50,000 to \$100 million for a structure. For the 1,811 active OCS leases in the Gulf of Mexico with structures or wells, GAO estimated the total cost of lease abandonment, as of March 1993, at about \$4.4 billion in current dollars. However, these leases were covered by only \$68 million in bonds. MMS determined that of these leases, 1,702, with estimated lease abandonment costs of about \$4.2 billion, were held by at least one financially capable party. These leases were covered by a total of \$45 million in general bonds.

MMS' August 1993 regulations increased the required amounts of general bonds, which should eventually increase the total amount of bond coverage on OCS leases. However, the increases are to be phased in over time, only when a change occurs in lease activity or ownership, with no deadline for completion. Also, at the same time, MMS changed the evidence required for evaluating the financial capability of parties responsible for OCS leases. Before, MMS used criteria that were developed for purposes unrelated to assessing a party's ability to pay for lease abandonment costs. The revised criteria, if properly implemented, could provide greater assurance that the leases have either at least one financially capable party or supplemental bonds in the full amount of the estimated lease abandonment costs. However, there is no specified time frame for implementing the new criteria, and they could be phased in over time. Thus, it may be some time until a significant number of leases have the new general and supplemental bonds, and some leases may never have them before the leases are abandoned. In commenting on a draft of this report, MMS said that it plans to initiate a rulemaking to set deadlines for completing new bond requirements.

Recommendations to the Secretary of the Interior

GAO recommends that the Secretary of the Interior direct the Director of MMS to

²A surety bond is a guarantee that the bond writer will pay a stipulated amount if the purchaser of the bond defaults on paying for obligations covered by the bond.

- encourage the use of nonexplosive technologies for removing offshore structures, whenever possible, that will eliminate or minimize the risk of harm to the environment and marine life;
- study the feasibility, benefits, and costs of mandating the use of nonexplosive methods of removing offshore structures, whenever possible, because of the harm that explosives do to marine life;
- require MMS to develop an inspection strategy for targeting its limited resources to ensure the proper plugging and abandonment of OCS wells and the clearance of lease sites; and
- complete a rulemaking to place time limits on the phase-in of both the increased general bond amounts and supplemental bonding under the new criteria.

Agency Comments

In written comments on a draft of this report, the Departments of the Interior and Commerce generally agreed with GAO's recommendations. Interior agreed that OCS lease abandonment technology needs further review, taking into account factors including safety, cost, and environmental effects. Interior stated that it was reevaluating its inspection strategy and considering various options for witnessing more abandonment activities. In addition, Interior stated that it recognized the need for a deadline for all lessees to have increased bond coverage and is developing regulations to accomplish this. Commerce noted that the report is well written and will be understood by an audience with a broad range of expertise on the impacts that removing structures has on marine environments. The departments' comments have been incorporated in the report where appropriate.

Contents

| | | |
|---|--|-----------|
| Executive Summary | | 2 |
| Chapter 1 | | 10 |
| Introduction | Laws Pertaining to the Abandonment of OCS Leases | 12 |
| | Objectives, Scope, and Methodology | 13 |
| Chapter 2 | | 16 |
| MMS Could Do More to Protect the Environment From the Effects of OCS Oil and Gas Lease Abandonment | MMS Has Taken Actions to Limit Lease Abandonment Effects on Marine Life and the Environment | 16 |
| | MMS Is Not Encouraging Nonexplosive OCS Structure Removal Technology | 19 |
| | MMS Does Not Have an Inspection Strategy for Ensuring That Wells Are Properly Plugged | 22 |
| | MMS Lacks Adequate Assurance That Lease Sites Are Properly Cleared | 23 |
| Chapter 3 | | 25 |
| MMS Is Improving How It Protects the Government From Incurring OCS Oil and Gas Lease Abandonment Costs, but More Could Be Done | MMS Has Taken Actions to Hold Parties Responsible for Lease Abandonment Costs | 25 |
| | Protecting Against the High Costs of OCS Oil and Gas Lease Abandonment | 26 |
| | MMS Is Improving Its Criteria for Determining Financial Capacity | 28 |
| | MMS Has Not Obtained Supplemental Bonds for All OCS Leases That Need Such Bonds | 30 |
| Chapter 4 | | 32 |
| Conclusions and Recommendations | MMS Could Do More to Protect the Environment From the Effects of OCS Oil and Gas Lease Abandonment | 32 |
| | MMS Is Improving How It Protects the Government From Incurring OCS Oil and Gas Lease Abandonment Costs, but More Could Be Done | 33 |
| | Recommendations to the Secretary of the Interior | 34 |
| | Agency Comments | 34 |

Contents

| | | |
|-------------------|--|----|
| Appendixes | Appendix I: Comments From the Department of the Interior | 36 |
| | Appendix II: Comments From the Department of Commerce | 41 |
| | Appendix III: Major Contributors to This Report | 46 |
| Figure | Figure 1.1: Offshore Platform | 11 |

Abbreviations

| | |
|-------|-----------------------------------|
| GAO | General Accounting Office |
| MMS | Minerals Management Service |
| NEPA | National Environmental Policy Act |
| NMFS | National Marine Fisheries Service |
| OCS | Outer Continental Shelf |
| OCSLA | Outer Continental Shelf Lands Act |
| SBA | Small Business Administration |

Introduction

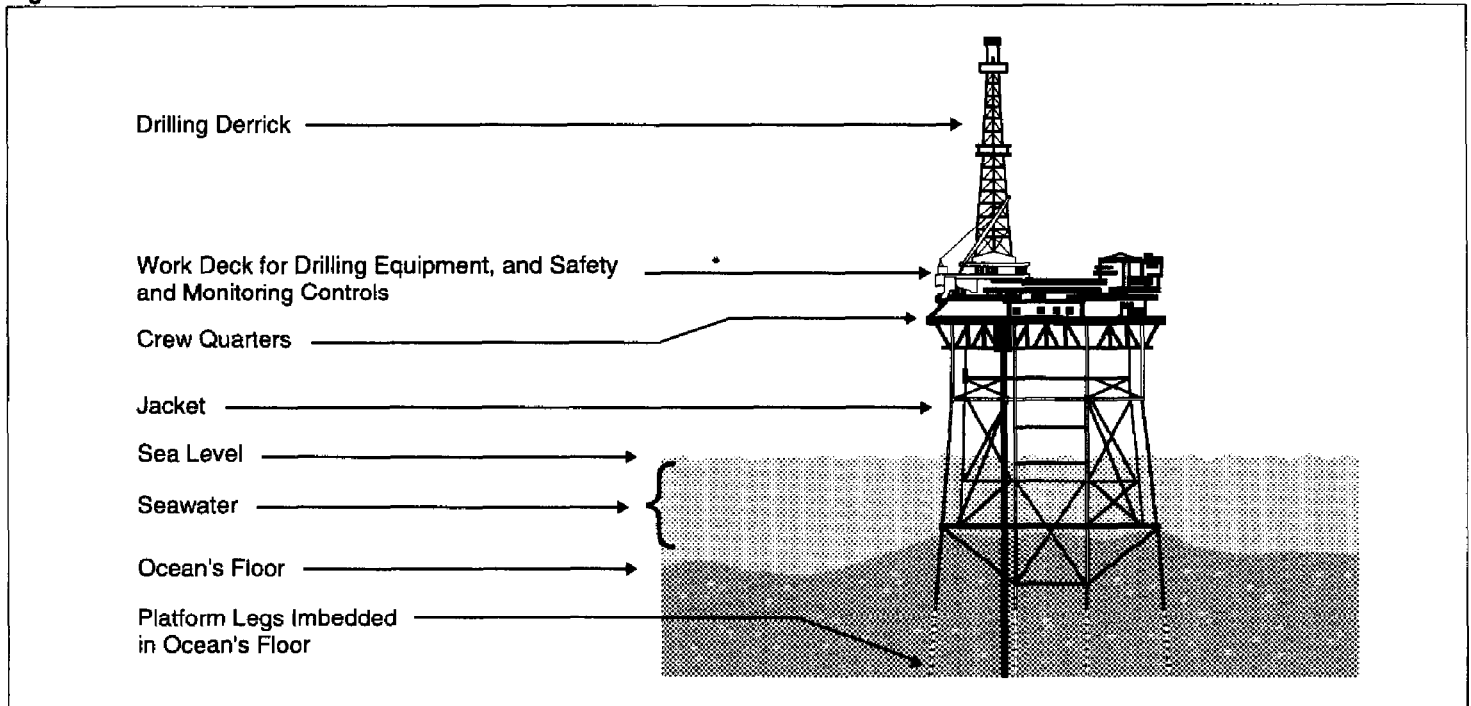
Since 1953, the Department of the Interior has managed the development of oil and gas resources of the Outer Continental Shelf (OCS).¹ Interior's Minerals Management Service (MMS) issues and manages OCS oil and gas leases; among other things, MMS is responsible for ensuring that when production ends, the leases are abandoned in a manner that prevents unreasonable harm to marine life and the environment. MMS is also responsible for ensuring that the parties responsible for the OCS leases bear the costs of the lease abandonment activities. These activities include plugging and abandoning wells to prevent leaks, removing structures, and clearing lease sites of obstructions to prevent hazards to commercial fishing and shrimping as well as navigation.

OCS oil and gas structures vary in size and complexity. Simple structures include such things as single pipes and single well protectors. Modern structures are made of steel, or sometimes, steel and concrete. Most of the large platforms have living quarters for the crew, a helicopter pad, and room for drilling and production equipment. A typical platform is designed so that 12 to 48 or more wells may be drilled from it by directional drilling. Wells from a single platform may extend over an area of several thousand acres (as measured at the bottom of the holes).

Platforms consist of three main components—the superstructure, or deck; the jacket; and the pilings. The deck is the surface where work is performed. The jacket rests on the ocean's floor and has columns, or legs, that extend above the water's surface. Pilings to hold the structures in place are driven through the legs into the ocean's floor. The jacket guides the installation of pilings and is a structural unit to support the deck. Furthermore, it resists waves, currents, wind, and earthquakes. Figure 1.1 shows a steel-jacket offshore platform.

¹The OCS is the area approximately from 3 to 200 miles off the coast of the United States that is under federal jurisdiction. It may extend even further off the coast if oil or gas can be economically developed. The first 3 miles offshore (9 miles offshore in the cases of Texas and the Gulf coast of Florida) are under the jurisdiction of the adjacent states.

Figure 1.1: Offshore Platform



Oil and gas structures are removed most often by using underwater explosives to shear the portions that extend to the ocean's floor. This kills nearby fish and can kill marine mammals and endangered sea turtles if they are near the structure being removed. To fulfill its responsibility for protecting the environment, MMS regulates OCS lease abandonment; this includes limiting the use of underwater explosives to remove structures in the Gulf of Mexico.

MMS is also responsible for ensuring that parties responsible for OCS lease abandonment costs pay those costs. These costs range from about \$50,000 to \$100 million per structure, depending on the structure's size and the water's depth in which it is located. The federal government may have to incur these costs if the responsible parties fail to pay them.

As of December 1993, there were about 3,800 OCS oil and gas structures, virtually all of which were located in the Gulf of Mexico.² For many years,

²MMS has four OCS regions: Alaska, Atlantic, Gulf of Mexico, and Pacific. Because most OCS leases are in the Gulf of Mexico, this report only addresses MMS' management of lease abandonment in its Gulf of Mexico Region.

more structures were installed each year than removed. However, in 1992 and 1993, a total of 343 structures were removed and 195 installed, all in the Gulf of Mexico.

Laws Pertaining to the Abandonment of OCS Leases

The Outer Continental Shelf Lands Act (OCSLA), as amended (43 U.S.C. 1331 et seq.), requires the Secretary of the Interior to administer mineral leasing, exploration, and development on the OCS. Among OCSLA's purposes are balancing resource development with protection of the environment and encouraging the development of new and improved technology for the production of resources that will eliminate or minimize the risk of damage to the environment. OCSLA also mandates that the Secretary require the use of the best available and safest technologies feasible. To enforce the requirements, including those affecting the environment, OCSLA requires the Secretary to inspect every OCS facility at least once annually as well as to conduct periodic on-site inspections without advance notice.

In addition, under the National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. 4321 et seq.), it is national policy that all federal agencies, including MMS, promote efforts that will prevent or eliminate damage to the environment. Under NEPA, agencies must study alternative courses of action concerning uses of available resources when a recommended action might significantly affect the quality of the environment.

Two other acts are also relevant to protecting marine life from the effects of OCS oil and gas lease abandonment. One, the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.), requires, among other things, that federal agencies consult with the Secretary of Commerce in order to ensure that any action will not likely jeopardize the continued existence of any marine endangered or threatened species. Endangered sea turtles and other marine life were found dead on the Texas and Louisiana coasts in 1986. Evidence suggested that this was caused by explosives used to remove OCS oil platforms in adjacent waters. As a result, the National Marine Fisheries Service (NMFS), within the Department of Commerce, and MMS formally agreed on measures for protecting endangered sea turtles in the Gulf of Mexico when oil and gas structures are removed using explosives.

The second act is the Marine Mammal Protection Act of 1972, as amended (16 U.S.C. 1371 et seq.), which places a moratorium on the "taking" of marine mammals, including a complete cessation of harassing, hunting,

capturing, or killing, except as approved under the act. This act does not require federal agencies to consult with the Secretary of Commerce to ensure that actions will not jeopardize marine mammals. However, approval must be obtained from the Secretary for exceptions to the moratorium on taking. MMS also addresses the effects of OCS lease abandonment on marine mammals in its environmental impact statements and environmental studies.

Objectives, Scope, and Methodology

The Chairman, Senate Committee on Governmental Affairs, asked us to evaluate the Department of the Interior's management of OCS oil and gas lease abandonment. We were asked to evaluate (1) MMS' actions to minimize the environmental impact of lease abandonment and (2) the estimated costs of lease abandonment and MMS' approach for ensuring that the government is not burdened with these costs.

To evaluate Interior's actions to minimize the environmental effects of lease abandonment, we reviewed applicable federal laws and regulations. We interviewed MMS officials at the Gulf of Mexico OCS Region regarding the removal of structures and site clearance requirements. We interviewed academicians in the scientific community. We interviewed NMFS officials at the Southeast Regional Office and the Galveston Laboratory about the use of explosives for the removal of OCS structures. We interviewed representatives from oil and gas companies working offshore, OCS oil and gas service contractors, and the Offshore Operators Committee (an industry association of oil and gas operators in the Gulf of Mexico) about methods for removing offshore structures. We interviewed representatives from the Gulf of Mexico Fishery Management Council to obtain information on the effect of explosives on fish.³ We interviewed officials and reviewed documents of the U.S. Army Corps of Engineers' New Orleans District Office regarding methods of removing offshore structures in Louisiana state waters. Finally, we contacted several environmental groups to obtain their views on the environmental effects of removing structures in the Gulf of Mexico. The groups we contacted included the World Wildlife Fund, the National Wildlife Federation, the Natural Resources Defense Council, the National Fish and Wildlife Foundation, the National Coalition for Marine Conservation, the Sierra Club, Greenpeace, the Environmental Defense Fund, the National Audubon Society, Friends of the Earth, and the Center for Marine Conservation.

³The Gulf of Mexico Fishery Management Council is one of eight regional Fishery Management Councils established by the Fishery Conservation and Management Act of 1976, as amended (16 U.S.C. 1852). The Council manages fishery resources in the Gulf of Mexico.

In order to determine if MMS' procedures ensure that oil and gas companies adequately clear the ocean's floor after removing their structures, we interviewed several members of MMS' site clearance committee. This committee included (1) MMS and state and local officials and (2) representatives from the oil and gas and commercial fishing and shrimping industries. We also interviewed five commercial fishermen/shrimpers to obtain their views on the adequacy of MMS' site clearance procedures. Two of the commercial fishermen/shrimpers were members of the site clearance committee, another was president of the Louisiana Shrimp Association, and one was a member of the Organization of Louisiana Fishermen. In addition, we interviewed the executive director of the Texas Shrimp Association.

To determine estimated total OCS lease abandonment costs to remove structures, plug wells, and clear sites in the Gulf of Mexico, we obtained and analyzed an MMS database containing estimated lease abandonment costs for active leases with structures or wells. We verified that formulas used by MMS to calculate lease abandonment costs were accurately derived from actual cost data developed by MMS for 37 structures. We verified that MMS' estimated lease abandonment costs were accurately calculated using the formulas. Finally, we calculated lease abandonment costs for all active leases with structures and/or wells using MMS' formulas.

To evaluate Interior's approach to ensure that the government is not burdened with lease abandonment costs, we reviewed MMS' OCS bonding requirements as they relate to lease abandonment. We also reviewed federal laws and regulations. Furthermore, we interviewed MMS officials at headquarters in Washington, D.C., and at the Gulf of Mexico OCS Region. And we interviewed industry representatives from four major oil and gas trade associations—the American Petroleum Institute, the Independent Petroleum Association of America, the Offshore Operators Committee, and the National Ocean Industries Association. In addition, we interviewed officials of the Surety Association of America and the Department of the Treasury regarding the evaluation of financial risk as well as the reliability of surety companies providing OCS bonds. Finally, we gathered information on state laws and regulations concerning lease abandonment and bonding requirements from state regulatory officials with the Louisiana Department of Natural Resources, the California State Lands Commission, and the Texas General Land Office.

The Departments of the Interior and Commerce provided written comments on a draft of this report. These comments are presented in

Chapter 1
Introduction

appendixes I and II, are evaluated in chapter 4, and have been incorporated in the report where appropriate. We conducted our review from October 1992 through November 1993 in accordance with generally accepted government auditing standards.

MMS Could Do More to Protect the Environment From the Effects of OCS Oil and Gas Lease Abandonment

Although MMS has acted to ensure that OCS oil and gas lease abandonment does not adversely affect the environment in the Gulf of Mexico, it could do more. Specifically, MMS has not done all it can to encourage the development of nonexplosive structure-removal technologies that would eliminate or minimize damage to the environment. In addition, MMS does not have an inspection strategy for ensuring that wells are properly plugged and abandoned and lease sites cleared to protect the environment.

MMS Has Taken Actions to Limit Lease Abandonment Effects on Marine Life and the Environment

MMS requires lessees to remove all oil and gas structures from the OCS within 1 year after a lease is terminated. In addition, lessees must plug and abandon wells and clear the site. MMS regulates these lease abandonment activities to protect the environment; this includes providing for the suspension or prohibition of any activity that poses a threat to aquatic life or to the marine, coastal, or human environment.

MMS Requires Well Plugging and Abandonment

MMS regulations require that OCS oil and gas wells that are no longer useful be plugged and abandoned in accordance with specified technical provisions. A producing well is no longer useful when it lacks the capacity for further profitable oil and gas production. Wells can be abandoned throughout the life of a lease. Operators must submit a notice of intent to abandon a well, which must show the reason for abandonment, supporting data, and a description of the proposed work. According to MMS, its engineers review this documentation for compliance with regulations.

Well plugging and abandonment generally involves setting a series of cement plugs inside a well. The operator must test the plugs under pressure to protect against the possibility of a leak. Lessees are required to submit a well abandonment report to MMS describing the manner in which the work was accomplished.

Structure Removal Is Done in Stages

Generally, portions of structures above the water are removed first. Then the portions of structures that extend to the ocean's floor are removed. It is this underwater aspect of structure removal that poses the greatest risk to the environment. These portions are removed by using either explosives or nonexplosive means such as cutters.¹ To prevent obstructions from oil and gas activities from remaining after removal, MMS regulations require that all OCS oil and gas platforms and other structures be removed to a

¹Examples of cutters include arc cutters, which use a torch to cut, and mechanical cutters, which use rotating blades or a high-pressure jet of sand to cut.

depth of at least 15 feet below the ocean's floor unless an exception is approved by MMS.

In accordance with the agreement reached between NMFS and MMS to protect endangered sea turtles in the Gulf of Mexico, companies cannot use more than 50 pounds of explosives per detonation unless an exception is granted for each use of more than 50 pounds. Companies must also (1) have observers, approved by NMFS, to look for turtles around the removal site prior to, during, and after the detonation; (2) conduct an aerial survey before and after each detonation; (3) delay a detonation to allow observed turtles to be removed to at least 1,000 yards away from the blast site; (4) detonate only during daylight hours; (5) look for turtles and marine mammals before and after detonations and remove dead or injured ones; (6) stagger detonations to minimize the cumulative effects of the blasts; (7) not use explosive charges to scare turtles away; and (8) report the results to MMS and NMFS. If a company seeks an exception to the restriction on using more than 50 pounds of explosives per detonation or to remove a structure less than 15 feet below the ocean's floor, MMS and NMFS consult to determine if additional measures—for example, a larger area observed or increased time of observations—should be required.

Besides protecting turtles, the above actions help protect marine mammals. For example, no exception has been granted to the OCS oil and gas industry under the Marine Mammal Protection Act for the incidental killing of marine mammals through the removal of structures. However, in 1990, the American Petroleum Institute requested that NMFS provide such an exception. In June 1993, NMFS published a proposed rule providing for such an exception.

MMS Requires Site Clearance

MMS regulations require that every OCS lease site be cleared so that structures, equipment, and other obstructions do not conflict with other uses of the OCS. In addition, MMS regulations and a related notice require a lessee to verify and certify that the ocean's floor at a lease site has been cleared. Since 1990 MMS has required that, in the Gulf of Mexico, parties responsible for OCS leases must contract with trawlers to verify that sites are clear for all sites located in water less than 300 feet deep. These sites must be trawled entirely in two directions by a trawling boat outfitted with nets that are representative of the accepted shrimping industry standard. All oil- and gas-related debris encountered during the trawl must be removed from the ocean's floor. In addition, a verification letter from the

Chapter 2
MMS Could Do More to Protect the
Environment From the Effects of OCS Oil
and Gas Lease Abandonment

trawler, including details and results of the trawl, must be submitted by the lessee or operator to MMS.

MMS began requiring trawlers to verify site clearance in the Gulf of Mexico after receiving complaints from the commercial shrimping industry that some sites were not being properly cleared of debris and obstructions. To respond to those complaints, MMS formed a committee to study the site clearance problem and make recommendations on how MMS could best revise its regulatory requirements. The site clearance committee, comprising shrimping industry and oil and gas industry representatives as well as state and local government and MMS officials, recommended MMS' current requirements.

For structures located in water over 300 feet deep, lessees must verify a site's clearance by means that are approved by MMS. MMS requires that operators verify that these sites are cleared by using sonar.

MMS Conducts Other
Activities to Protect the
OCS Environment

To comply with NEPA, MMS prepares environmental impact statements and environmental assessments. These documents are prepared every 5 years for the oil- and gas-leasing program, for each lease sale, and for specific activities under the leasing program. The program and sale documents address lease abandonment activities.

MMS also has an Environmental Studies Program that develops information needed for an assessment of the impacts that the oil-and gas-leasing program has on the OCS. This program has produced several studies on specific aspects of the OCS environment, including the use of explosives to remove oil and gas structures. In addition, its staff members are generally cognizant of other environmental studies.

MMS also has Environmental Operations staff members who are responsible for ensuring that lease activities are environmentally acceptable. For example, they evaluate environmental studies in order to make recommendations on how lease activities should be conducted, and they conduct endangered species consultations with NMFS.

MMS Is Not Encouraging Nonexplosive OCS Structure Removal Technology

Although one of the purposes of OCSLA is to encourage technology that will eliminate or minimize the risk of environmental damage, MMS has not adequately studied the costs and benefits of using nonexplosive technologies nor taken actions to encourage their use. The majority of OCS oil and gas structures have been removed using explosives, which kill fish and can harm any other nearby marine life. However, technologies for the removal of structures exist that do not use explosives and do not adversely affect the environment by killing fish and threatening endangered sea turtles and protected marine mammals.

Explosives Kill Marine Life

The fact that the explosives used to remove OCS oil and gas structures kill nearby marine life has been well documented. Following the kills of endangered turtles, protected dolphins, and fish that evidence suggested resulted from the use of explosives to remove platforms in the Gulf of Mexico in 1986, MMS began formal consultation with NMFS under the Endangered Species Act to limit the use of explosives in order to protect endangered turtles. In addition, a 1987 MMS environmental assessment of potential impacts associated with the removal of OCS structures noted that, unlike explosives, nonexplosive removal methods minimize or eliminate harm to marine life. The potential for explosive removal methods to harm marine life was also pointed out in MMS' 5-year oil and gas Environmental Impact Statement for 1992-97, which states that "platform removal could result in harm to sea turtles and marine mammals when explosive structure-removal operations are conducted."

In May 1991, the Gulf of Mexico Fishery Management Council, which represents recreational fishing, commercial fishing, seafood processing, and environmental, scientific, consumer, and state conservation interests expressed concern to MMS that the use of explosives to remove OCS oil and gas structures was killing large numbers of fish. The Council urged MMS to suspend the use of explosives to remove large offshore structures until MMS determined the effects on fish. MMS responded that the available evidence on the effects on fish of using explosives to remove OCS structures did not justify a moratorium on the use of explosives. Nevertheless, in 1991, MMS initiated a study to be done by NMFS to determine the extent of fish kill caused by explosive removals of OCS oil and gas structures. This study is now scheduled to be completed around the end of 1994.

Nonexplosive Methods of OCS Structure Removal Are Used to Some Extent

Nonexplosive methods of removing OCS oil and gas structures are available and would minimize or eliminate adverse effects on the environment. From 1987 through 1992, 570 OCS oil and gas structures were removed in the Gulf of Mexico. Of these, 378 (66 percent) were removed using explosives, and the remaining 192 (34 percent) were removed using nonexplosive methods.

A 1987 environmental assessment by MMS on the removal of OCS structures stated that both arc cutters and mechanical cutters are feasible, and that with both methods, "damage to marine life is minimal or non-existent."² The assessment also stated that several nonexplosive technologies, such as cutters that use abrasive sand, were emerging. A 1987 U.S. Army Corps of Engineers paper on the removal of structures in Louisiana state waters commented on alternative methods of removing structures.³ It stated that the industry most often uses explosives because it believes them to be cheaper and simpler. However, the paper also stated that nonexplosive techniques can be equally effective. The paper noted that the Corps had received 15 requests to remove structures using explosives, but further noted that when the Corps sent back a standard request for information, including a request for information on why explosives were needed, 11 of the requests were withdrawn and nonexplosive means used instead.

Officials of some oil and gas companies that use nonexplosive methods such as cutters told us that these methods have already proved to be cost-effective in successfully removing structures. However, even some of these officials told us that it is cheaper and/or more efficient to use explosives for some removals. And representatives from some other companies believe that explosives are generally cheaper and/or more efficient for removing structures.

Officials of two companies that manufacture cutters for the removal of offshore structures told us that although they have successfully demonstrated their technologies to OCS oil and gas operators, some operators resist using these technologies. One official cited companies' long-term use of explosives as one reason for this resistance. The other official cited companies' bad experiences with previous nonexplosive methods as another reason. The latter official said that oil and gas companies have not taken into consideration the improvements in

²Gulf of Mexico OCS Region, Proceedings: Eighth Annual Gulf of Mexico Information Transfer Meeting, OCS Study MMS 88-0035 (Dec. 1987), pp. 304-306.

³Robert Bosenberg, "Perspective on Oil and Gas Production Structure Removals and the Permit Process," U.S. Army Corps of Engineers, New Orleans District.

mechanical cutter technology that have made it as cost-effective as explosives.

We were unable, however, to determine for ourselves which method was more efficient and/or economical. Neither MMS nor the oil companies that we contacted had documented the relative costs and benefits of the different technologies. Such cost-benefit studies of using alternative technologies should, among other things, consider the effects of water depth, structure size and configuration, environmental effects, and human safety. Anecdotal evidence provided by oil companies and MMS and the results of our analysis of how structures have been removed were both inconclusive and contradictory.

MMS Actions Encourage Use of Explosives

Although one of OCSLA's purposes is to encourage the development of new and improved technology to eliminate or minimize the risk of damage to the environment, MMS has not weighed the costs and benefits of nonexplosive removal methods nor encouraged their use. In fact, certain MMS actions may actually encourage the use of explosives.

For example, in 1993, MMS' Gulf of Mexico Region proposed to NMFS relaxing the limits on the use of explosives. The proposal would allow companies, without getting a specific exception from NMFS, to increase the maximum amount of explosives used from 50 to 150 pounds per detonation, and the proposal would eliminate the use of observers in certain areas of the Gulf that are designated as unlikely to have turtles present. The MMS Gulf of Mexico Regional Supervisor for Field Operations told us that MMS proposed the change because companies sometimes had to use repeated explosive charges to accomplish the removal of a structure, which was inefficient. However, another MMS regional official told us that oil and gas companies have rarely requested exceptions to use larger explosive charges. In fact, since the NMFS limit of 50 pounds per detonation was imposed in 1988, only 9 of 335 removals of structures, through 1992, used more than 50 pounds of explosives per detonation, by approval from NMFS.

MMS initiated the proposal to relax the limits on the use of explosives without adequate study. For example, MMS did not analyze the extent to which larger explosive charges have been required to remove certain structures. In addition, MMS' justification for designating certain areas of the Gulf, where endangered sea turtles need less protection from explosives, is not relevant. MMS cited an NMFS study that concluded that

one area of the Gulf needed additional protective measures but the remainder of the Gulf would be adequately protected under existing requirements. The study did not address increasing the allowed amount of explosive charges from 50 to 150 pounds per detonation. Furthermore, MMS' study, being conducted by NMFS, of the effects of explosives on fish is not yet complete.

Some oil and gas company representatives told us that if MMS encouraged or required the use of nonexplosive removal methods, companies would have an incentive to develop this technology and that this technology should be given an opportunity to prove and improve itself. This reflects a 1985 National Research Council report that stated that as the number of removals of OCS structures increases, technical removal proficiency will improve. And one company official told us that MMS' proposal to allow the increased amount of explosives without having to seek an exception from NMFS actually encourages the use of explosives and serves as a disincentive to using nonexplosive methods.

While OCSLA requires that MMS encourage the use of technologies that eliminate or minimize the risk of damage to the environment, MMS Gulf of Mexico regional officials told us at the time of our review that MMS is not, and does not have plans for, doing anything to encourage nonexplosive removal methods. One official said that such action is not MMS' responsibility and that MMS is not concerned with what method is used, even though relaxing the limit on the use of explosives might encourage the use of explosives. However, in commenting on a draft of our report, MMS noted that it was reevaluating the potential safety and environmental impacts of various structure-removal technologies.

MMS Does Not Have an Inspection Strategy for Ensuring That Wells Are Properly Plugged

MMS does not have an overall inspection strategy for ensuring that wells are properly plugged and abandoned to protect against future leaks. If oil leaks from an improperly plugged well, there is a risk that the environment and marine life will be adversely affected. Mammals, birds, fish, shellfish, and plants can be killed by oil. An MMS official told us that although no abandoned OCS oil leases are known to have had leaking plugged wells, leaks have been known to occur from plugged wells on leases that have not yet been abandoned. However, if a well were found to be leaking after the lease was abandoned and its structures removed, correcting the problem would be more difficult. Boats, equipment, and personnel would have to be mobilized to replug the well. During this period of time, oil would continue to escape from the well.

The OCSLA requires that MMS inspect all OCS facilities subject to environmental regulation at least once a year and that MMS conduct periodic unannounced inspections. MMS' approximately 50 technicians in the Gulf of Mexico Region are responsible for inspecting about 3,800 OCS facilities. According to MMS, in 1992, 516 wells were plugged and abandoned in the Gulf of Mexico, and MMS technicians inspected 46, or about 9 percent of them. However, technicians inspect well plugging and abandonment only when that coincides with either a scheduled annual inspection or an unannounced inspection. MMS does not have an overall strategy that targets its limited inspection resources to ensure that wells are properly plugged and abandoned. For example, MMS does not target leases near the end of their productive lives for inspection to ensure that wells have been properly plugged and abandoned and may never inspect the plugging and abandonment of wells on some leases. As a result, we believe MMS has little assurance that wells will not leak after a lease site has been abandoned.

MMS Lacks Adequate Assurance That Lease Sites Are Properly Cleared

MMS lacks adequate assurance that OCS oil and gas lease sites are properly cleared. MMS relies on lessees and operators to conduct and verify site clearance but does not independently verify that it is done properly.

For leases in water less than 300 feet deep, MMS requires lessees and operators to hire trawlers to conduct site clearance, then to submit to MMS a letter from the trawlers verifying that sites were cleared plus a letter from the lessees and operators that the verification was witnessed by them. MMS allows lessees and operators to hire the trawlers, as long as the trawlers have a valid commercial trawling license and prior experience in trawling operations. When this procedure began in 1990, MMS and the fishing and shrimping industry believed the trawlers would have a vested interest in ensuring that lease sites were properly cleared. However, MMS does not require that trawlers hired for site clearance verification derive their livelihood from fishing or shrimping. MMS approves the trawlers that lessees and operators plan to hire on the basis of their satisfying MMS' equipment and experience requirements. However, MMS does not verify that site clearance verification has been properly performed. For example, MMS does not observe trawlers, hire trawlers to spot-check sites, or use alternate means to verify site clearance when possible. An MMS Gulf of Mexico regional official told us that such additional measures could be considered but that they have not been used to date because existing procedures are thought to be adequate.

Chapter 2
MMS Could Do More to Protect the
Environment From the Effects of OCS Oil
and Gas Lease Abandonment

Several commercial fishermen and shrimpers told us they were pleased with MMS' current use of trawlers for site clearance, and they believed the Gulf of Mexico is cleaner now than it used to be. Nevertheless, the president of the Louisiana Shrimp Association, representing commercial shrimpers in that state, expressed concern to us about the need for better independent site clearance verification. Specifically, he told us about an instance when he was hired by a salvage company to clear a site but was dismissed before verifying that the site was cleared because his nets continued to snag on an obstruction. The salvage company nevertheless submitted a site clearance verification letter to MMS. Subsequently, he informed MMS that the site was not clear, and MMS required the responsible company to send divers to determine if the snag was caused by debris from the lease site. The divers retrieved an object, but it was not determined whether the object was due to oil and gas activities.

MMS Is Improving How It Protects the Government From Incurring OCS Oil and Gas Lease Abandonment Costs, but More Could Be Done

MMS has developed a workable approach for protecting the government from incurring OCS oil and gas lease abandonment costs in the Gulf of Mexico. However, prior to an August 1993 change in MMS' bonding requirements, MMS' implementation of this approach had been putting the government at financial risk. As of March 1993, Gulf of Mexico leases with \$4.4 billion in estimated lease abandonment costs were covered by only \$68 million in bonds.

MMS' approach consists of two parts: (1) requiring a general bond for all leases and (2) requiring supplemental bonds in the amount of the total estimated costs of lease abandonment for leases without at least one party deemed financially capable. However, the criteria that MMS had been using to assess financial capability may not have adequately measured a company's ability to pay for the potentially significant costs of lease abandonment.

In August 1993, MMS promulgated new regulations that changed the criteria for financial capability and increased the general bond amounts.¹ However, both of these changes are to be phased in over an open-ended period of time. This could result in a lengthy period before the new coverage is in place, and some leases may never have the new coverage. In commenting on a draft of this report, MMS said that it recognizes the need for a deadline for all leases to comply with the increased levels of bond coverage and is developing a rulemaking to accomplish that result.

In addition, proper well plugging and abandonment and structure removal are needed to minimize the opportunity for problems to surface after a lease has been abandoned. If such problems were to occur and MMS were unable to locate responsible parties to correct the problems and/or to obtain sufficient remuneration from bonds, the government would have to incur the costs.

MMS Has Taken Actions to Hold Parties Responsible for Lease Abandonment Costs

MMS regulations require OCS leases to be covered by surety bonds to guarantee compliance with all lease terms, including lease abandonment.² If a lease has more than one lessee, MMS requires co-lessees to designate a single operator to fulfill the lessees' obligations, including posting the bond. However, the co-lessees remain liable if the operator defaults on obligations.

¹These regulations became effective November 26, 1993.

²MMS also accepts U.S. Treasury securities in lieu of surety bonds and, as of November 1993, accepts other means of financial security—for example, a nonrevocable letter of credit.

Chapter 3
MMS Is Improving How It Protects the
Government From Incurring OCS Oil and
Gas Lease Abandonment Costs, but More
Could Be Done

Ownership of a lease, in whole or part, may be assigned from one party to another, with MMS' approval. An assignee obtains the benefits and liabilities of its lease that occur from the assignment date forward. The assignor remains responsible for obligations that accrued prior to assignment, including lease abandonment.

General Bonds

MMS regulations specify that, at a minimum, every OCS oil and gas lease must be covered by a general bond. Previously, this bond was in the amount of \$50,000 for a bond covering a single lease or \$300,000 for an areawide bond covering all leases bonded by one party in one OCS area.³ However, MMS, concerned that those general bond amounts might be inadequate because of the high costs of lease abandonment, changed its regulations in August 1993 to increase general bond amounts to as much as \$3 million for an areawide bond. In order not to overwhelm the oil and surety industries by requiring simultaneous conversion to the higher amounts, MMS regulations provide that the new amounts will be phased in when there is a change in lease activity or ownership.

Supplemental Bonds

In May 1992, MMS decided to require a supplemental bond for any lease that does not have at least one responsible party that is financially capable of fulfilling lease abandonment obligations. A supplemental bond is required for the full amount of estimated lease abandonment costs, less the amount of general bond coverage. If MMS determines that estimated lease revenues and oil and gas reserves are sufficient to enable the responsible parties to pay for lease abandonment costs, the supplemental bond amount may be phased in over time.

Protecting Against the
High Costs of OCS Oil
and Gas Lease
Abandonment

OCS oil and gas lease abandonment costs can range from \$50,000 to \$100 million dollars for a structure. Lease abandonment costs vary depending on water depth as well as the size and complexity of structures. For the 1,811 active leases with structures or wells in the Gulf of Mexico, we estimated the total cost of lease abandonment at about \$4.4 billion as of March 1993.⁴ These leases were covered by \$68 million in bonds. Prior to the mid-1980s, most OCS oil and gas leases were obtained by large oil and gas companies. MMS considered the financial resources of these

³An OCS area is the same as one of MMS' four regions.

⁴MMS has not attempted to estimate when each lease would be abandoned. Therefore, this estimate, in current dollars, is based on the assumption that all structures were removed, wells plugged and abandoned, and sites cleared at the time this estimate was made.

Chapter 3
MMS Is Improving How It Protects the
Government From Incurring OCS Oil and
Gas Lease Abandonment Costs, but More
Could Be Done

companies sufficient to ensure performance of lease obligations, including payment of lease abandonment costs, and only required general bonds to protect the government from incurring these costs. However, according to MMS, leases are increasingly being held by smaller oil and gas companies. This is happening for two reasons. First, as production declines from older leases, large companies no longer regard them as economical to operate. Smaller companies, with less expenses, believe they can operate some of those leases profitably, so the large companies assign those leases to the smaller ones. Second, smaller companies are increasingly bidding on and obtaining new leases. Because smaller companies generally have less financial resources, the risk that a company might not be able to pay its lease abandonment costs could increase.

MMS' August 1993 regulations, which increased general bond amounts, should eventually increase the total amount of bond coverage on OCS leases in the Gulf of Mexico. However, increased bond amounts are to be phased in over time, with no deadline for when the phase-in shall be completed. That is, new general bond amounts will only be required when a lease comes up for review because of certain actions that may occur during the life of a lease, such as the filing of an exploration plan or a development and production plan. Thus, it may be some time before many leases have the new bond amounts. Furthermore, leases that are in production in the Gulf of Mexico may not experience an action that would trigger an increase in the general bond amount.

At the time of our review, MMS had not paid any lease abandonment costs because responsible parties had failed to do so. However, there have been a few cases in which bonded parties defaulted on lease abandonment obligations. For the cases that have been resolved, MMS has been able to get co-lessees or new parties taking over those leases to accept responsibility for paying the costs. Because MMS holds assignors responsible for lease abandonment costs, large oil and gas companies that assign leases to smaller companies continue to provide assurance that lease abandonment costs will be covered for those leases. However, because assignors could also default, supplemental bonds serve a valuable purpose for protecting the government's financial interest.

Furthermore, to protect the government from incurring lease abandonment costs if responsible parties cannot be found and/or lease bonds are insufficient to cover the costs, it is important that MMS have measures in place to ensure that wells are properly plugged and abandoned and lease sites are properly cleared. Properly abandoning

leases in the first place would reduce the opportunity for problems to arise later that may result in the incurring of costs by the government.

MMS Is Improving Its Criteria for Determining Financial Capacity

The criteria that MMS had been using to determine the financial capacity of parties responsible for OCS leases may not have adequately measured their ability to pay for the potentially significant costs of lease abandonment. As a result, MMS may not have been obtaining sufficient bond coverage through supplemental bonds. As of March 1993, Gulf of Mexico leases with \$4.4 billion in estimated lease abandonment costs were covered by only \$68 million in bonds. However, MMS' August 1993 regulations that change the criteria could improve this situation.

From May 1992 until November 1993, MMS allowed a company to submit various evidence to demonstrate its financial capacity. However, in lieu of other evidence, MMS adopted certain criteria for deeming a company financially capable of meeting its lease abandonment responsibilities. These criteria included (1) a Small Business Administration (SBA) criterion for distinguishing between large and small oil and gas companies, (2) two financial criteria developed by MMS on the basis of SBA's criterion, and (3) MMS' criterion for determining large oil and gas companies for the purpose of regulating bidding on OCS leases. Thus, to be deemed financially capable of fulfilling lease abandonment obligations without a supplemental bond, a company must have met one of the following criteria:

- Total employment of 500 or more.
- Minimum net worth of \$35 million.
- Minimum gross annual sales of \$45 million.
- Worldwide production of oil, gas, and petroleum products that exceeds 1.6 million barrels in 6 months.

The criteria used by MMS between May 1992, when it began requiring supplemental bonds, and November 1993 were developed for purposes unrelated to assessing a company's ability to pay lease abandonment costs. For example, a company with 500 employees but with less than \$35 million in net worth would have been considered financially capable, without regard to the estimated abandonment costs of its leases.

As of May 4, 1993, MMS' financial capacity criteria resulted in the exemption of 153 parties from the requirement for supplemental bonding. These 153 parties were responsible for 1,702 (94 percent) of the 1,811

Chapter 3
MMS Is Improving How It Protects the
Government From Incurring OCS Oil and
Gas Lease Abandonment Costs, but More
Could Be Done

leases with structures and/or wells in the Gulf of Mexico. Because MMS determined that these 1,702 leases were held by at least one financially capable party, only general bonds were required. The estimated lease abandonment costs for these leases was about \$4.2 billion and was covered by \$45 million in general bonds.

Being determined financially capable may have little to do with a company's financial capability, according to the criteria used by MMS until November 1993. For example, as of January 29, 1993, MMS had identified four bankrupt companies responsible for OCS oil and gas leases that were on the exempt list. That is, they met one of MMS' criteria—for example, number of employees—but were in bankruptcy.

In August 1993, MMS revised its regulations for supplemental bonds to change the evidence required for evaluating financial capability. As a result of the revised regulations, MMS will use audited financial statements, projected production, longevity of OCS operations, credit ratings, and past compliance with legal requirements. However, the regulations do not specify what criteria will be used to determine that a company is financially capable. At the time of our review, MMS was developing these criteria. An MMS Gulf of Mexico Region official told us that MMS is attempting to develop criteria that relate to a company's total liability for offshore operations. The revised regulations, if properly implemented, could provide greater assurance that leases have either at least one financially capable party or supplemental bonds in the full amount of estimated lease abandonment costs.

However, MMS' May 1992 supplemental bond criteria specified that such bond coverage would be phased in over time. That is, leases would only be subject to supplemental bonds when certain activities occurred, such as the filing of exploration plans. MMS' August 1993 regulations do not specify a time frame for implementation. If the new requirements for supplemental bonds are phased in over time, it may take some time until a significant number of leases that should have supplemental bonds have them. Furthermore, some leases may never have an activity that triggers review of the need for supplemental bonds. In commenting on a draft of this report, MMS said that it recognizes the need for a deadline for all leases to comply with the increased levels of bond coverage and is developing a rulemaking to accomplish that result.

MMS Has Not Obtained Supplemental Bonds for All OCS Leases That Need Such Bonds

As of March 1993, 109 of the 1,811 leases in the Gulf of Mexico with structures and/or wells did not have at least one responsible party that met MMS' pre-November 1993 criteria for financial capacity. Although MMS' procedures required supplemental bonds in the full amount of estimated lease abandonment costs for these leases, 68 leases did not have supplemental bonds. The estimated lease abandonment costs for these 68 leases are about \$114 million, but they are covered by only about \$4 million in bonds.

Although MMS requires supplemental bonds on all leases without at least one financially capable responsible party, since supplemental bonding began in 1992, MMS has been obtaining supplemental bonds only on leases as they were assigned. A Gulf of Mexico Region official told us that MMS is planning to obtain supplemental bonds on other leases where needed, in accordance with the supplemental bonding criteria that became effective November 1993.

We found that 61 of the 68 leases that should be but are not covered by supplemental bonds were leased by or assigned to current lessees before MMS implemented its supplemental bond procedures and may not have had changes in lease activity that would trigger the requirement of supplemental bonds. These leases have estimated abandonment costs of \$108 million but are covered by only about \$3 million in total bonds. The remaining seven leases that should have supplemental bonds but do not were leased by or assigned to current lessees after MMS implemented its supplemental bond procedures. Specifically, we found the following:

- Four leases have new structures or wells since their most recent assignments. When MMS reviewed the assignments, supplemental bonds were not required because there were no structures or wells on the leases. MMS should have obtained supplemental bonds to cover the new estimated abandonment costs for these leases of \$1.4 million. However, these leases are covered by only about \$100,000 in bonds.
- Two leases are covered by one areawide bond. However, their total estimated lease abandonment costs exceed the amount of the areawide bond, so the leases are inadequately covered and should have supplemental bonds. These leases have estimated abandonment costs of \$700,000 but are covered by \$300,000 in bonds.
- One lease was transferred as part of a bankruptcy resolution to a company that is not exempt. MMS is working on obtaining a supplemental bond on this lease. This lease has estimated abandonment costs of \$3.4 million.

Chapter 3
MMS Is Improving How It Protects the
Government From Incurring OCS Oil and
Gas Lease Abandonment Costs, but More
Could Be Done

Because these leases do not have appropriate bond coverage, the government is at risk for their costs of lease abandonment.

Conclusions and Recommendations

To protect the environment from the effects of OCS oil and gas lease abandonment and to protect the federal government from incurring costs, it is important that OCS oil and gas lease abandonment be done properly. For example, if wells are not properly plugged and abandoned, the environment could be damaged before personnel, boats, and equipment could be mobilized to replug the well. Furthermore, if MMS were unable to locate responsible parties to correct problems caused by improper site clearance and/or to obtain sufficient remuneration from bonds, the government would have to incur the costs.

We believe that MMS could do more to ensure that OCS oil and gas lease abandonment does not adversely affect the environment in the Gulf of Mexico. MMS has not encouraged the nonexplosive removal of OCS structures. In addition, MMS does not have an overall inspection strategy for ensuring that wells are properly plugged and abandoned nor does it independently verify that lease sites are properly cleared. As a result, MMS has little assurance that wells will not leak after a lease has been abandoned and that sites are properly cleared.

While we believe that MMS has developed a workable approach for reducing the likelihood that the government will be burdened with lease abandonment costs, it could do more. Its implementation of this approach has not ensured that all parties have been adequately bonded, and it may be some time before a significant number of leases have the coverage required.

MMS Could Do More to Protect the Environment From the Effects of OCS Oil and Gas Lease Abandonment

MMS has taken actions to protect the environment in the Gulf of Mexico from adverse effects of lease abandonment. However, MMS could do more to protect the environment. Specifically, MMS has not done all it can to meet OCSLA's purpose of encouraging the development of technologies that minimize or eliminate harm to the environment. Using explosives to remove OCS structures kills marine life, and alternative technologies that do not adversely affect the environment are available and can be further developed. While MMS has not studied the costs and benefits of using such technologies nor encouraged their use, in commenting on this report, MMS noted that it is reevaluating the potential safety and environmental impacts of various structure removal technologies.

In addition, MMS does not have an overall strategy that targets its limited inspection resources to ensuring that wells are properly plugged and abandoned and lease sites cleared. As a result, MMS has little assurance

that wells will not leak after a lease site has been abandoned and that sites are properly cleared. MMS' inspection strategy for ensuring that wells are properly plugged and abandoned could include targeting some of its inspections to a sample of plugging and abandonment operations. MMS could take any number of actions to assure that lease sites are properly cleared, such as having

- on-board MMS observers during selected trawling operations;
- independent verification, using trawlers hired by MMS or other means, to sample sites that have been verified as clear by lessees and operators;
- MMS certification of trawlers that may be hired for site clearance verification; and/or
- direct contracting of trawlers by MMS, to be reimbursed by the oil and gas companies.

MMS Is Improving How It Protects the Government From Incurring OCS Oil and Gas Lease Abandonment Costs, but More Could Be Done

MMS' approach, which requires (1) general bonds for OCS oil and gas leases with responsible parties that are financially capable and (2) supplemental bonds in the full amount of estimated lease abandonment costs for leases without at least one financially capable party, is workable for providing reasonable assurance that the taxpayer is not burdened with lease abandonment costs. However, until recently, MMS' implementation of this approach put the government at risk because MMS' criteria for determining parties' financial capacity may not have been appropriate to ensure sufficient financial coverage.

In addition, under pre-August 1993 criteria, MMS did not obtain supplemental bonds for 68 leases that should have had them. Instead of financial coverage in the full amount of estimated lease abandonment costs, these leases have bonds that would cover only about 4 percent of their estimated abandonment costs.

MMS' August 1993 regulations established new financial capability criteria for determining the need for supplemental bonds and increased general bond amounts. If properly implemented, the new criteria could help ensure that the government is adequately protected from incurring lease abandonment costs. However, because the time frames for implementation of these requirements are open-ended, it is possible that it will be some time before a significant number of leases have the new coverage required under the regulations. And leases that do not have the necessary administrative change to trigger a review of the need for supplemental bonds may never have supplemental bond coverage. In

commenting on a draft of this report, MMS recognized the need for a deadline for all leases to comply with the increased levels of bond coverage and said that it is developing a rulemaking to impose such a deadline.

Recommendations to the Secretary of the Interior

In order to better protect the environment from the effects of OCS oil and gas lease abandonment and the federal government from incurring the costs of such abandonment, we recommend that the Secretary of the Interior direct the Director of MMS to do the following:

- Encourage the use of nonexplosive technologies for removing offshore structures, whenever possible, that will eliminate or minimize the risk of harm to the environment, in accordance with OCSLA's purpose.
- Study the feasibility, benefits, and costs (including the potential effects on the environment and the safety of humans) of mandating the use of nonexplosive methods of removing offshore structures, whenever possible, because of the harm that explosives do to marine life.
- Require MMS to develop an inspection strategy for targeting its limited resources to ensure the proper plugging and abandonment of OCS wells and the clearance of lease sites.
- Complete a rulemaking to place time limits on the phase-in of both the increased general bond amounts and supplemental bonding under the new criteria. Establishing such limits would help ensure that the government is adequately protected from incurring costs associated with OCS lease abandonment that should be paid by the companies responsible for the leases.

Agency Comments

In commenting on a draft of this report, the Department of the Interior generally agreed with our recommendations. Specifically, Interior agreed that OCS lease abandonment technology needs further review, taking into account factors including safety, cost, and environmental effects. Interior noted that it considered safety a prime concern when evaluating the technologies proposed for the removal of OCS structures. Interior also indicated that while it has had few problems with improper lease abandonments, it was reevaluating its inspection strategy and considering options for witnessing more abandonment activities. In addition, Interior stated that it recognized the need for a deadline for all lessees to comply with the increased levels of bond coverage and is developing a rulemaking to accomplish this.

The Department of Commerce concurred with our recommendations to Interior and noted that the report is well written and will be understood by an audience with a broad range of expertise on the impacts of the removals of OCS structures on marine environments. Commerce suggested that it would be helpful if the report explained the characteristics of structures that can be more cheaply or efficiently removed with the use of explosives. We cannot provide the characteristics of structures that can be more cheaply or efficiently removed with the use of explosives because neither MMS nor the oil companies that we contacted had documented the relative costs and benefits of using such technologies. Accordingly, we have recommended that MMS study the feasibility, benefits, and costs of mandating the use of nonexplosive methods of removing offshore structures. Such a study should consider, among other things, the effect of water depth, structure size and configuration, environmental effects, and human safety. Commerce also noted that it would be useful if the report provided specific guidance on how MMS should encourage alternative removal technologies for removing offshore structures and suggested that MMS might use incentives or penalties. We believe that until a cost-benefit study of alternative methods of removing OCS structures is completed, it would be premature to use incentives or penalties. Rather, MMS should issue a directive encouraging the use of nonexplosive technologies, whenever possible, that will eliminate or minimize the risk of harm to the environment.

Both departments' comments have been incorporated in the report where appropriate.

Comments From the Department of the Interior



United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Washington, DC 20240

APR 05 1994

Mr. James Duffus III
Director, Natural Resources Management Issues
U.S. General Accounting Office
441 G Street, NW.
Washington D.C. 20548

Dear Mr. Duffus:

The Department of the Interior appreciates the opportunity to review the General Accounting Office (GAO) draft report GAO/RCED 94-82, "OFFSHORE OIL AND GAS RESOURCES: Interior Can Improve Its Management of Lease Abandonment." General and specific comments prepared by the Minerals Management Service (MMS) on the draft report findings and recommendations are enclosed for your incorporation into the final GAO report (Appendix A). The general comments included in Appendix A are intended to inform the GAO about the complexities found in the audit subject matter as they relate to the findings and recommendations. Specific comments pertaining to individual recommendations follow the general comments.

We appreciate the time and effort your auditors spent in meeting with members of the MMS on March 10, 1994, to clarify the issues and to ensure a mutual understanding of the report contents. My staff informs me that the meeting was positive and beneficial to all involved.

Sincerely,

Bob Armstrong
Assistant Secretary, Land and
Minerals Management

Enclosure

**Appendix I
Comments From the Department of the
Interior**

**Comments from the Minerals Management Service (MMS) Concerning
the Draft General Accounting Office (GAO) Report - "OFFSHORE OIL
AND GAS RESOURCES: Interior Can Improve Its Management of Lease
Abandonment" (GAO/RCED-94-82)**

The MMS appreciates the efforts made by GAO in evaluating its lease abandonment program. We feel that the meeting that we had with your office on March 10 was particularly helpful in clarifying both of our views. We also appreciate the extension until March 18 to submit our response.

As we said at the meeting, abandonments in the Outer Continental Shelf (OCS) are becoming more numerous; therefore, MMS is studying several aspects of its abandonment program to see if improvements or updates are necessary. The MMS will consider GAO's report, conclusions, and recommendations as it carries out its mission of ensuring safe and effective well and lease abandonments.

The GAO recommends that MMS study the feasibility of using nonexplosive methods for removing OCS oil and gas structures and, wherever possible, encourage their use. The MMS agrees that abandonment technology needs further review and assessment. To this end, we are reevaluating the potential safety and environmental impacts of various structure removal technologies.

The MMS considers safety a prime concern when evaluating the technologies proposed in structure removal applications. Unfortunately, some nonexplosive removal techniques entail great risk to human life. Commonly used nonexplosive techniques were instrumental in the deaths of at least three divers and the injury of two others in separate OCS incidents in recent years.

The MMS also is reviewing its abandonment requirements, including the relationship of the structure depth removal requirement to the application of nonexplosive techniques. In some cases, MMS's standard requirement to remove a structure to 15 feet below the mud line makes nonexplosive technology unfeasible. We also must ensure that the site is completely cleared and that any portion of a structure left in place remains buried over time. Otherwise, it could present a hazard to vessels, fishing activities, and other uses of the OCS.

Many factors determine the feasibility of nonexplosive techniques. The MMS will continue to take factors such as safety, cost, water depth, the age and condition of the structure, as well as the presence of grouting in structure members into account when evaluating structure removal applications.

**Appendix I
Comments From the Department of the
Interior**

To ensure that any adverse effects on the marine environment are minimized, MMS consults with the National Marine Fisheries Service (NMFS). All structure removals using explosives (generic and nongeneric) are conducted in a manner that is consistent with our agreement with NMFS. The NMFS experts witness the structure removals. The MMS marine scientists and inspectors often witness these removals also.

The MMS has commissioned studies and uses all available information concerning explosive and nonexplosive techniques for oil and gas facility removals. The MMS currently is funding a study, conducted by NMFS, to determine the risk that nonprotected fish may be killed during explosive removals of various types of structures.

The MMS also conducts workshops and meetings concerning oil and gas structure removals. In March 1994, at the University of Santa Barbara, MMS is sponsoring a public workshop concerning the removal of offshore oil and gas facilities. A noteworthy meeting in 1991 with the Offshore Operators Committee (OOC) provided an update on platform removal techniques. In the opinion of recognized experts in the field, except for simple structures in shallow water, nonexplosive removal methods are neither cost effective, safe, nor reliable. The OOC presented a study which concluded that the potential impact of explosive removal of structures on red snapper populations is insignificant when compared to the impact of bycatch from shrimp trawling activities.

The GAO also recommended that MMS target abandonments in an inspection strategy. Although we have had few problems with improper abandonments in the OCS, we are evaluating our inspection strategy and considering options for witnessing more abandonment activities.

Well pluggings are very successful in the OCS. The MMS regulations require the testing of cement or mechanical plugs in abandoned wells to prevent leaks. The MMS engineers assess plugging plans and procedures for all well abandonments to ensure compliance with the regulations. The MMS inspectors then verify that the wells and leases are abandoned in accordance with the approved plans and procedures.

With regard to clearing lease sites, MMS requires specific verification procedures. This strategy has proven to be extremely successful, and complaints from shrimpers snagging equipment on debris have been greatly reduced. The MMS requires that trawlers possess a valid commercial trawling license for both the vessel and its captain. Also, the captain must have prior experience in trawling operations. It is our experience that the captains and crews take great pride in their work because they have a vested interest to verify that sites are

**Appendix I
Comments From the Department of the
Interior**

properly cleared since they may also have a shrimping operation. Also, if the sites are not cleared properly, the lessee is still responsible for cleanup activities.

The GAO also recommends that MMS amend regulations regarding end-of-lease surety bonding to place time limits on the phase-in of both the increased general bond amounts and supplemental bonding. The MMS recognizes the need for a deadline for all lessees to comply with the increased levels of bond coverage and is developing a rulemaking to accomplish that result.

Appendix I
Comments From the Department of the
Interior

GAO Response to
Interior's Comments

See the end of chapter 4 for a discussion of these comments.

Comments From the Department of Commerce



THE SECRETARY OF COMMERCE
Washington, D.C. 20230

MAR 23 1994

The Honorable James Duffus III
Director, Natural Resources Management Issues
General Accounting Office
Resources, Community, and
Economic Development Division
Washington, D.C. 20548

Dear Mr. Duffus:

Enclosed is a copy of the Department of Commerce's reply to the General Accounting Office draft report entitled "Offshore Oil and Gas Resources: Interior Can Improve Its Management of Lease Abandonment."

These comments are prepared in accordance with the Office of Management and Budget Circular A-50.

Sincerely,

A handwritten signature in cursive script that reads "Ronald H. Brown".

Ronald H. Brown

Enclosure

Appendix II
Comments From the Department of
Commerce

COMMENTS: The draft report is well written and will, therefore, be understood by an audience with a broad range of expertise on the impacts of rig removals on marine environments. The report addresses the significant issues regarding the removal of structures related to the production of oil and gas resources in the Gulf of Mexico: (1) safeguarding the environment and (2) ensuring that the government, thus the American taxpayer, is not burdened with the costs of mitigating environmental impacts.

There are, however, a few areas in which the report could be strengthened. First, there are a number of places where interpretations or quotes of specific documents or publications are included. Readers would benefit from a "Literature Cited" section in the report with appropriate citations noted in the body of the report.

Now on p. 20.

The word "some" appears several places in the text. For example, on page 22 the author states "...it is cheaper and/or more efficient to use explosives for some removals." Readers would benefit from more detailed information in these instances. In the above example, the authors could explain the characteristics of structures for which explosives are cheaper or more efficient, as well as the proportion of structures for which explosives would be the preferred method of removal.

The report repeatedly states that the Minerals Management Service (MMS) is improving its protection of the environment, but could do more. Specific suggestions for actions that the MMS could initiate are generally lacking. The MMS would benefit from additional guidance or suggestions in specific actions it could initiate to encourage alternative methods and to alter its inspection strategy.

Several specific comments follow:

Now on p. 2.

- page 3, line 39-42. The report states that the Department of Interior is responsible for the environment, and the Department of Commerce, through the National Marine Fisheries Service, is responsible for marine life. Such a division understates the management responsibility of the Department of Commerce. The Department of Commerce is responsible for conserving marine and estuarine ecosystems, which include living resources and their habitats.

Now on p. 13.

- page 12, second paragraph. The report states "However, approval must be obtained from the Secretary for exceptions to the moratorium on taking." That approval is a rule-making process and includes public notice and comment.

Now on p. 17.

- page 17, third paragraph. The "agreement" noted in the first line of the paragraph is a formal consultation under Section 7 of the Endangered Species Act (ESA). It included an Environmental Assessment and biological opinion.

Appendix II
Comments From the Department of
Commerce

2

Now on p. 17.

- pages 17-18, carry-over paragraph. The consultation required to use more than 50 pounds of explosive is a separate consultation under Section 7 of the ESA for each instance in which more than 50 pounds of explosive is requested.

RECOMMENDATION: Encourage the use of non-explosive technologies for removing offshore structures, whenever possible, that will eliminate or minimize the risk of harm to the environment and marine life.

RESPONSE: The Department concurs with this recommendation. The report does not describe specific actions to implement this recommendation. We note that encouraging alternatives to explosives may take either of two broad approaches: offering incentives for using other technologies, such as cutters, and imposing penalties for using explosives. The former approach is preferred.

RECOMMENDATION: Study the feasibility, benefits, and costs of mandating the use of nonexplosive methods of removing offshore structures, whenever possible, because of the harm that explosives do to marine life.

RESPONSE: The Department concurs with this recommendation. Our support of such a study does not mean that the Department believes that use of explosive removal methods necessarily results in significant harm to environments. The potential for such harm exists, but experience so far (results of monitoring removals under the ESA, Section 7, Consultations) indicates that the potential harm is not necessarily realized. We add, however, that bulk explosives and shaped charges should be distinguished from one another. Using shaped charges may result in smaller explosions (approximately 12 pounds versus 50 pounds for bulk explosives). The benefits of nonexplosive, rather than explosive, methods should be evaluated on their impact on affected populations. Clearly, explosive structure removals kill fish and other marine life; however, the number of organisms killed is only a portion of the impact evaluation.

The report states that MMS is currently studying the impact of explosive structure removals on fish populations in the Gulf of Mexico. The recommended study on the feasibility, benefits, and costs of mandatory use of nonexplosives would benefit from the results of this study, which is due for completion in late 1994. A major consideration in evaluating the impact of explosive removals is to separate the impact of the explosion from the removal of the structure, which is mandated by law. Did the addition of the structures increase the carrying capacity of affected fish populations within the Gulf by creating habitat that would otherwise have been unavailable? Hopefully, the study

Appendix II
Comments From the Department of
Commerce

3

MMS is conducting on fish populations will answer this and other related questions.

RECOMMENDATION: Require MMS to develop an inspection strategy for targeting its limited resources to ensure the proper plugging and abandonment of Outer Continental Shelf wells and the clearance of lease sites.

RESPONSE: The Department concurs with the intent of this recommendation. Presumably MMS' lack of an inspection strategy results from the detection of no problems in those cases where inspections coincided with other efforts. Such a finding would support focusing limited resources on other responsibilities. If, however, there are problems noted in the inspections that have been conducted, a more thorough inspection strategy is warranted.

RECOMMENDATION: Amend regulations regarding bonding to place time limits on the phase-in of both the increased general bond amounts and supplemental bonding under the new criteria.

RESPONSE: The Department concurs with this recommendation. This recommendation is supported by the most specific advice in the report. It is not clear, however, if amending regulations would help alleviate problems with inadequate bond coverage in existing leases.

GAO Response to
Commerce's
Comments

See the end of chapter 4 for a discussion of these comments.

Major Contributors to This Report

**Resources,
Community, and
Economic
Development
Division, Washington,
D.C.**

Robert W. Wilson, Assistant Director
Leonard W. Ellis, Assignment Manager

Dallas Regional Office

Thomas F. Ward, Evaluator-in-Charge
Sally Moino, Site Senior
Charles Lin, Evaluator

Ordering Information

The first copy of each GAO report and testimony is free. Additional copies are \$2 each. Orders should be sent to the following address, accompanied by a check or money order made out to the Superintendent of Documents, when necessary. Orders for 100 or more copies to be mailed to a single address are discounted 25 percent.

Orders by mail:

**U.S. General Accounting Office
P.O. Box 6015
Gaithersburg, MD 20884-6015**

or visit:

**Room 1000
700 4th St. NW (corner of 4th and G Sts. NW)
U.S. General Accounting Office
Washington, DC**

**Orders may also be placed by calling (202) 512-6000
or by using fax number (301) 258-4066.**

