United States Government Accountability Office

GAO

Report to the Chairman, Subcommittee on Interior, Environment, and Related Agencies, Committee on Appropriations, House of Representatives

March 2010

# OFFSHORE OIL AND GAS DEVELOPMENT

# Additional Guidance Would Help Strengthen the Minerals Management Service's Assessment of Environmental Impacts in the North Aleutian Basin

GAO-10-276

March 2010

# OFFSHORE OIL AND GAS DEVELOPMENT

## Additional Guidance Would Help Strengthen the Minerals Management Service's Assessment of Environmental Impacts in the North Aleutian Basin

GAO Accountability • Integrity • Reliability

Highlights

Highlights of GAO-10-276, a report to the Chairman, Subcommittee on Interior, Environment, and Related Agencies, Committee on Appropriations, House of Representatives

### Why GAO Did This Study

Interest has re-emerged in developing oil and gas in the nation's offshore areas, such as the North Aleutian Basin. Located on the outer continental shelf (OCS) where the Aleutian Islands meet the Alaskan mainland around Bristol Bay, the basin may contain sizable oil and gas deposits, although the area's environmental and cultural sensitivity has made oil and gas development in the area controversial. The Alaska OCS Region within the Department of the Interior's Minerals Management Service (MMS) oversees oil and gas development in this offshore area.

GAO was asked to examine issues related to oil and gas development in the North Aleutian Basin. This report (1) describes the basin's estimated quantities of oil and gas and needed infrastructure; (2) identifies steps MMS is to take to meet federal requirements for oil and gas development; and (3) identifies challenges, if any, MMS faces in meeting these requirements in its Alaska OCS Region. GAO analyzed laws and documents and interviewed representatives from MMS, other federal agencies, state agencies, industry, and other stakeholders.

### What GAO Recommends

GAO recommends that MMS develop additional, comprehensive guidance for conducting and reviewing environmental analyses and fully implement agency policy on information sharing. Interior generally agreed with our findings and fully concurred with our recommendations.

View GAO-10-276 or key components. For more information, contact Mark E. Gaffigan at (202) 512-3841 or gaffiganm@gao.gov.

### What GAO Found

MMS estimates that substantial amounts of natural gas could exist in the North Aleutian Basin, although the estimates range widely and the upper ranges are highly uncertain. MMS estimates that, with existing conventional techniques, there is a 19 in 20 chance that at least 20 million barrels of oil, and 400 billion cubic feet of natural gas, exist in the basin but a 1 in 20 chance that as much as 2.5 billion barrels of oil, and 23.3 trillion cubic feet of natural gas, exist. MMS officials attribute the estimates' wide range to a lack of data. Although the estimates are much lower than those for other offshore areas, they are high enough to generate oil industry interest. But limited infrastructure exists in the basin for oil and natural gas development, and building the needed infrastructure—such as pipelines, processing facilities, and a tanker terminal—would likely cost billions of dollars.

MMS has taken the first of many steps in an extensive process for meeting federal requirements to develop oil and gas in the North Aleutian Basin. Under the OCS Lands Act, MMS's process for oil and gas development comprises four stages: (1) preparing a nationwide 5-year program, (2) planning for and holding a specific lease sale, (3) approving a company's exploration plan, and (4) approving a company's development and production plan. Figuring prominently at each of these stages, the National Environmental Policy Act (NEPA) requires MMS to evaluate the likely environmental effects of proposed actions. As of December 2009, MMS had not proceeded beyond the second stage—the lease sale stage—in the basin. According to MMS officials, completing all four stages could take at least 10 more years. Moreover, delays can occur at any stage; indeed, a number of delays have already occurred in developing oil and gas in the Alaska OCS Region.

GAO found that MMS faces challenges in the Alaska OCS Region in carrying out its responsibilities under NEPA. Although Interior policy directs its agencies to prepare handbooks providing guidance on how to implement NEPA, MMS lacks such a guidance handbook. The lack of a comprehensive guidance handbook, combined with high staff turnover in recent years, has left the process for meeting NEPA requirements ill defined for the analysts charged with developing NEPA documents. This absence has also left unclear MMS's policy on what constitutes a significant environmental impact. Furthermore, guidance is also lacking for conducting and documenting NEPA-required analyses to address environmental and cultural sensitivities, which have often been the topic of litigation over Alaskan offshore oil and gas development. In addition to litigation, MMS has been subjected to allegations by stakeholders and former MMS scientists of suppression or alteration of their work on environmental issues. GAO also found that the Alaska OCS Region shares information selectively. This practice is inconsistent with agency policy, which directs that information, including proprietary data from industry, be shared with all staff involved in environmental reviews. According to regional staff, this practice has hindered their ability to complete sound environmental analyses under NEPA.

# Contents


**Letter** 1

Background 3
The North Aleutian Basin May Contain Substantial Oil and Natural Gas, but the Amounts Are Highly Uncertain, and Limited Infrastructure Exists 7
Offshore Oil and Gas Development Involves an Extensive Process to Meet Federal Requirements, and MMS Has Taken the First Steps in the North Aleutian Basin 12
MMS Faces Challenges in Meeting Federal NEPA Requirements in the Alaska OCS Region 20
Conclusions 27
Recommendations for Executive Action 27
Agency Comments 28

**Appendix I** **Objectives, Scope, and Methodology** 30

**Appendix II** **Comments from the Department of the Interior** 33

**Appendix III** **GAO Contact and Staff Acknowledgments** 35


**Tables**


Table 1: Estimated Volumes of Undiscovered Technically Recoverable Oil and Gas in the North Aleutian Basin 8
Table 2: MMS's Key Responsibilities during the Four Stages of Offshore Oil and Gas Development 13


**Figures**


Figure 1: Alaska and the North Aleutian Basin OCS Planning Area 4
Figure 2: The Development of Petroleum 6
Figure 3: MMS's Estimates of Technically and Economically Recoverable Resources of Oil and Gas in the North Aleutian Basin 10
Figure 4: Delays in the Oil and Gas Development Process in MMS's Alaska OCS Region 19

**Abbreviations List**

| | |
|---|---|
| MMS | Minerals Management Service |
| NEPA | National Environmental Policy Act |
| NOAA | National Oceanic and Atmospheric Administration |
| OCS | outer continental shelf |

This is a work of the U.S. government and is not subject to copyright protection in the United States. The published product may be reproduced and distributed in its entirety without further permission from GAO. However, because this work may contain copyrighted images or other material, permission from the copyright holder may be necessary if you wish to reproduce this material separately.

GAO
Accountability * Integrity * Reliability

**United States Government Accountability Office**
**Washington, DC 20548**

March 8, 2010

The Honorable Norman D. Dicks
Chairman, Subcommittee
on Interior, Environment, and Related Agencies
Committee on Appropriations
House of Representatives

Dear Mr. Chairman:

Potentially sizable deposits of oil and gas could lie beneath Alaska's North Aleutian Basin, a remote undersea region almost the size of the state of Arkansas. Encompassing the waters of Bristol Bay, the basin is located just north and west of the Alaska Peninsula. To tap the basin's resources, the oil industry would operate within the portion of the North American continental edge that is federally designated as the outer continental shelf (OCS), a designation extending seaward from generally 3 geographical miles off the coastline to at least 200 nautical miles. Developing the region's oil and gas, however, has not been without controversy. The area provides habitat for several endangered species, and its fisheries are among the richest in the world. The waters also supply important food sources for Alaska Native communities that rely on subsistence hunting and fishing. In the wake of the 1989 *Exxon Valdez* oil spill, Congress imposed moratoria on oil and gas exploration and development in the North Aleutian Basin. In 1998, the administration also withdrew the area from oil and gas drilling. Later, after a push for more domestic oil production, Congress in 2003 lifted its moratoria, and the administration in 2007 rescinded its withdrawal as well, once again opening the area to petroleum resource development.[1]

Alaska's OCS areas fall under the jurisdiction and management of the Minerals Management Service (MMS) within the Department of the Interior, which, through three OCS regional offices, oversees the mineral and resource development of nearly 2 billion acres of submerged federal land. MMS's responsibilities include offshore oil and gas development, which is governed by federal law, primarily the Outer Continental Shelf

[1]Petroleum exists in both liquid and gaseous forms. Throughout this report, we refer to the liquid forms as "oil" and to the gaseous forms as "gas" or "natural gas"; we refer to the companies that develop both resource forms as "oil" companies.

Lands Act of 1958, as amended,[2] as well as the National Environmental Policy Act of 1969 as amended (NEPA).[3] Numerous other laws—to protect endangered species and cultural and historical resources, for example—also apply.

Under the OCS Lands Act, MMS is responsible for leasing federal OCS lands to meet the nation's energy needs and to generate revenue for the federal government in a manner that protects the environment. The OCS Lands Act outlines the process MMS is to follow to conduct environmental studies, choose areas for development, allow companies to explore and develop offshore areas, and collect revenues. During what is known as an oil and gas lease sale, MMS auctions the right for an oil company to lease specific tracts of the OCS for exploration and development. Once a company buys the right to lease these OCS lands, it also pays MMS rent, and if it actually finds and produces oil or natural gas, it must also pay royalties. To gather the information necessary to achieve the balance between oil and gas development and environmental protection, MMS staff prepare environmental analyses examining the likely environmental effects of specific oil and gas activities. Throughout the oil and gas development process, decision makers are required to consider environmental information and to mitigate adverse environmental effects. NEPA and the OCS Lands Act require the Secretary of the Interior to consider environmental information when making key decisions during the oil and gas leasing process.

You asked us to review issues surrounding oil and gas development in the North Aleutian Basin. Accordingly, this report (1) describes what is known about the estimated quantity of oil and gas in the North Aleutian Basin and the infrastructure needed to develop and deliver it to market; (2) identifies the key steps MMS is to take to meet federal requirements and directives for developing offshore oil and gas; and (3) identifies the challenges, if any, that MMS faces in meeting these federal requirements in its Alaska OCS Region.

To address these issues, we reviewed relevant laws, regulations, policies, case law, and other documentation. We interviewed officials in MMS's headquarters and Alaska OCS Region, as well as officials from the U.S. Fish and Wildlife Service, the National Oceanic and Atmospheric

[2]43 U.S.C. §§ 1331-1356.

[3]Pub. L. No. 91-190, 83 Stat. 852 (1970).

Administration's (NOAA) National Marine Fisheries Service (NOAA Fisheries Service), and the Environmental Protection Agency. We also spoke with officials from Alaska state agencies, including the Alaska Department of Natural Resources' Division of Oil and Gas. We met with representatives from the oil and gas industry; nongovernmental organizations; and native tribes, associations, and corporations. We also met with residents and government officials in communities of Cold Bay, Nelson Lagoon, and Sand Point, Alaska. Specifically, to determine what is known about the amount of oil and gas in the North Aleutian Basin, we interviewed MMS geologists and reviewed MMS's estimates of oil and gas resources. To determine the key steps MMS takes to meet federal requirements for developing oil and gas, we interviewed officials from MMS and other federal and state agencies, and we interviewed industry representatives. To determine the key challenges MMS faces in meeting federal requirements, we spoke with staff at MMS headquarters, as well as with staff at the Alaska, Gulf of Mexico, and Pacific OCS regions. Using semistructured interview questions, we interviewed all 19 staff in the Alaska OCS Region's Environmental Assessment and Environmental Studies sections and reviewed a nonrandom, nongeneralizable sample of 8 of the 11 environmental assessments or environmental impact statements issued by this office from 2003 through 2008; we also reviewed the 1985 environmental impact statement for the last lease sale proposed for the North Aleutian Basin. We also spoke with other federal agency officials at Interior's Office of Environmental Policy and Compliance, the Council on Environmental Quality, and the Bureau of Land Management. Appendix I describes our scope and methodology in greater detail.

We conducted this performance audit from September 2008 to March 2010, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

## Background

Bordered on the north by mainland Alaska and on the south by the Alaska Peninsula, MMS's 52,234-square-mile North Aleutian Basin Outer Continental Shelf Planning Area occupies the southeastern corner of the Bering Sea, including Bristol Bay (see fig. 1). Scattered along its remote coastline are some 20 towns and villages, whose populations range from 15 to about 2,300.

**Figure 1: Alaska and the North Aleutian Basin OCS Planning Area**

Sources: MMS and Map Resources (map).

Note: MMS's proposed 2011 lease sale area occupies approximately 9,000 square miles along the southern edge of the larger North Aleutian Basin OCS Planning Area.

The basin and its adjacent marine ecosystems are among the most biologically productive areas in North America, supporting major commercial fisheries, as well as subsistence economies. According to NOAA Fisheries Service and others, Bristol Bay supplies a substantial proportion of several major U.S. fisheries, including king crab, salmon,

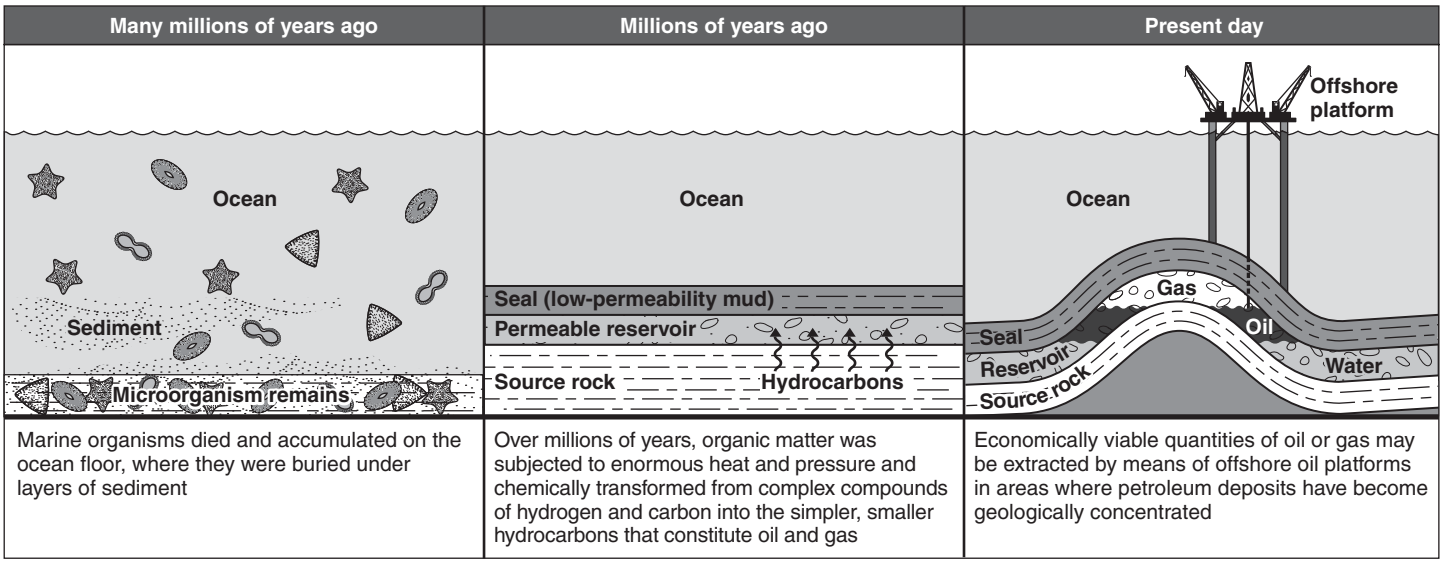
Pacific halibut, and pollock. The region is also home to several seabird and marine mammal species listed as endangered or threatened under the Endangered Species Act.[4]

Natural oil and gas seeps, widely observed on the Alaska Peninsula, hint at the North Aleutian Basin's underlying potential reserves of petroleum. Scientists say that petroleum derives largely from marine ooze—layers of once-living marine organisms that sank and were covered by sediment and buried at the bottom of ancient seas before they were exposed to air and biological decay. Over millions of years, layers of organic matter and layers of sediment built up, the sediment became rock, and great temperatures and pressures eventually transformed the organic matter (consisting of complex carbon, hydrogen, and oxygen molecules) into petroleum (smaller, simpler hydrocarbon molecules). As petroleum matures, and organic matter continues to break down, thicker liquids give way to thinner ones, and very simple, light, gaseous molecules—natural gas—are produced. Thus, liquid oil and natural gas are often found together. For oil or gas to accumulate in commercially attractive quantities, sediment-derived rocks must be present that are porous enough to collect substantial amounts of petroleum and permeable enough for the petroleum to flow through; an impermeable cap rock must also be present to trap and hold the oil and gas in place (see fig. 2). In 1983, a consortium of oil companies sank a test well in the North Aleutian Basin. Data from this well, coupled with additional data from seismic surveys, confirmed the existence of such geologic characteristics favorable to oil and gas.[5]

[4]The Endangered Species Act defines a species as endangered if it faces extinction throughout all or a significant portion of its range and as threatened if it is likely to become endangered in the foreseeable future. The act excludes recognized insect pests from this definition.

[5]Seismic surveys are an important method of exploring for oil and gas. Using sound reflected from the earth under the sea, they allow geologists and geophysicists to map subsurface geologic structures and identify conditions favorable for trapping oil and gas resources.

**Figure 2: The Development of Petroleum**




Source: GAO analysis of MMS and Colorado Geological Survey data.

In 1982, the Secretary of the Interior ordered the creation of MMS, consolidating all of Interior's OCS leasing responsibilities into a single agency.[6] This order gave MMS authority over assessing the nature, extent, recoverability, and value of leasable minerals on the OCS. To manage OCS energy resources, the Offshore Energy and Minerals Management program within MMS carries out resource evaluation and classification, environmental studies and reviews, lease sales and management, and inspection and enforcement activities. This program oversees a number of scientific and technical research efforts and funds scientific studies that contribute to understanding the potential impacts of OCS oil and gas leasing on human, marine, and coastal environments. Three OCS regional offices—Alaska, the Gulf of Mexico, and the Pacific OCS regions—make up Offshore Energy and Minerals Management, which is administered through MMS's headquarters in Washington, D.C.[7] Each region contains,

[6]Department of the Interior, Secretarial Order 3071 (Jan. 19, 1982).

[7]In December 2009, the Secretary of the Interior announced plans to establish a new Atlantic OCS Region office in 2010. Regional directors are responsible to the Associate Director for Offshore Energy and Minerals Management for overall direction and integration of the NEPA process into their activities and for NEPA compliance in their regions.

among others, an Environmental Studies Section and an Environmental Assessment (or Environmental Analysis) Section, which are the centers for MMS's environmental work related to NEPA implementation. These sections employ a wide array of subject-matter experts in such fields as geology, marine biology, economics, and oil spill risk assessment. MMS divides the regions of the OCS into 26 distinct geographical units called planning areas. The Alaska OCS Region administers the 15 offshore planning areas in Alaska, which, in addition to the North Aleutian Basin, include the Chukchi Sea and Beaufort Sea planning areas off Alaska's North Slope and the St. George Basin west of Bristol Bay.

## The North Aleutian Basin May Contain Substantial Oil and Natural Gas, but the Amounts Are Highly Uncertain, and Limited Infrastructure Exists

According to MMS estimates, substantial amounts of natural gas could exist in the North Aleutian Basin, although estimates vary widely and the upper ranges are highly uncertain. A number of considerations—including the costs of establishing the infrastructure needed to develop oil and gas—factor into the economic viability of petroleum resource development in the basin.

### MMS's Estimates of How Much Oil or Gas Is Technically Recoverable from the North Aleutian Basin Span a Wide Range

Derived from computer modeling analyses of a region's geology, MMS's estimates of what it terms undiscovered technically recoverable resources—amounts that can be recovered using conventional techniques—vary widely (see table 1). According to MMS's most recent estimates, as reported in its 2006 *North Aleutian Basin OCS Planning Area: Assessment of Undiscovered Technically Recoverable Oil and Gas*, the basin's geologic formations are likely to be sources primarily of natural gas, with about 67 percent of the undiscovered resources consisting of gas.

**Table 1: Estimated Volumes of Undiscovered Technically Recoverable Oil and Gas in the North Aleutian Basin**

| | F95[a] | Mean (average) | F5[b] |
|---|---|---|---|
| Oil | 20 million barrels | 750 million barrels | 2.5 billion barrels |
| Natural gas | 400 billion cubic feet | 8.6 trillion cubic feet | 23.3 trillion cubic feet |

Source: MMS.

Note: MMS typically cites three estimates, associated with three probabilities—a 95 percent chance; the mean, or average, chance; and a 5 percent chance—that at least these volumes of oil or gas exist. The difference between the 95 and the 5 percent estimates illustrates the degree of uncertainty associated with the estimates for that area.

[a]F95 means a 95 percent chance that the resources will equal or exceed the given quantity.

[b]F5 means a 5 percent chance that the resources will equal or exceed the given quantity.

MMS and industry officials attribute the wide range in the North Aleutian Basin's resource estimates to a lack of geologic information typically obtained from exploratory drilling and seismic testing. Seismic data were gathered mostly from the mid-1970s to the late 1980s, and one test well was drilled in 1983. Congressional moratoria beginning in 1989 and a presidential withdrawal in 1998 suspended offshore oil and gas development in the North Aleutian Basin, halting exploratory drilling or testing that could have more thoroughly characterized the basin's geology. As a result, according to MMS geologists, MMS's estimates of technically recoverable resources of oil and gas for the basin are based on data from the one test well and on seismic data gathered more than 20 years ago without benefit of today's higher-resolution survey techniques. Over the following decades, MMS refined its computer models and seismic interpretation capabilities; these refinements resulted in larger estimates based on the same data. An oil industry official told us that industry uses the same methodology as MMS for its own resource estimates, adding that MMS's estimates are "technically sound and thorough." According to MMS and industry officials with whom we spoke, data from additional exploratory wells and seismic tests would be needed to derive more-definitive estimates of the basin's resources.

MMS's oil and gas estimates for the North Aleutian Basin are considerably lower than those for other OCS planning areas. According to MMS's 2006 *Assessment of Undiscovered Technically Recoverable Oil and Gas Resources of the Nation's Outer Continental Shelf*, the mean estimate of the basin's technically recoverable oil resources, for example, ranks 12th among MMS's 26 OCS planning areas, and the mean natural gas estimate ranks 9th. Overall, the basin's mean estimate for technically recoverable

natural gas resources (8.6 trillion cubic feet) is about 2 percent of the mean estimate for all of the U.S. OCS regions combined.

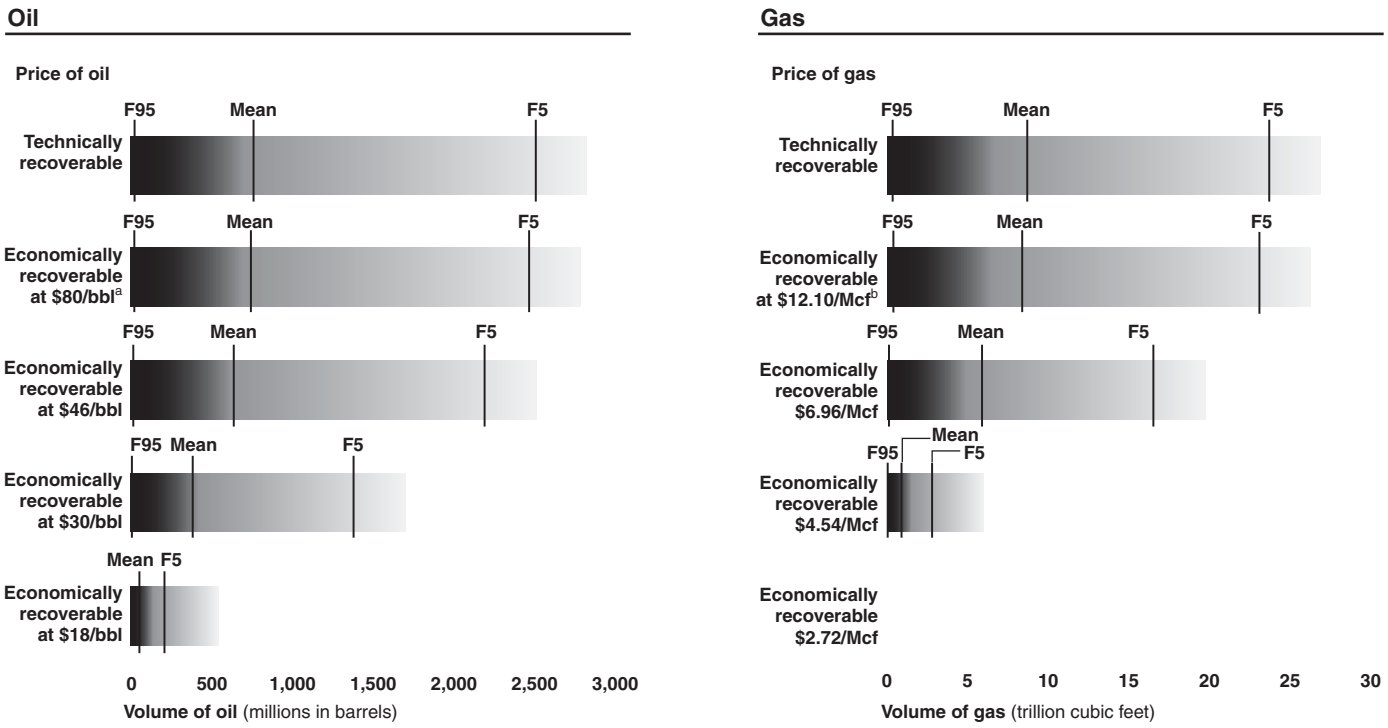
## The Amount of Oil and Gas Considered Economically Recoverable Depends on a Variety of Factors

Although the North Aleutian Basin may contain a substantial amount of oil and gas, only a certain fraction of that amount may be economically recoverable after factors such as oil and gas prices and infrastructure costs are considered. To estimate undiscovered economically recoverable resources, MMS starts with its estimates of technically recoverable resources and then factors in a range of possible future economic conditions. Variables such as oil and gas prices and infrastructure costs influence whether industry would be able to develop oil and gas. In general, higher future oil and gas prices make oil and gas development more economically feasible. On the other hand, higher raw material, labor, and infrastructure costs make it less feasible.

MMS uses computer models to calculate the economic viability of oil and gas development under a range of economic assumptions and resource amounts. The models produce a pair of linked oil and gas estimates for a given price. Estimates of undiscovered economically recoverable resources vary directly with oil or natural gas prices: as these prices fall, estimates of economically recoverable resources can drop below estimates of technically recoverable resources. For example, at $80 per barrel of oil and the associated natural gas price of $12.10 per thousand cubic feet, MMS estimates that nearly all of the basin's technically recoverable oil and natural gas would also be economically recoverable. In contrast, at $30 per barrel of oil and the associated natural gas price of $4.54 per thousand cubic feet, MMS estimates that only a small fraction of the technically recoverable oil and natural gas would be economically recoverable (see fig. 3).[8] Since 2006, when MMS made these paired estimates, natural gas prices have not risen at the same rate as oil prices, in part because of recent discoveries of natural gas in, for example, shale rocks once thought to be technically too hard to drill into. According to an MMS official, the agency will account for this disparity in its next official oil and gas estimate.

[8]At the end of February 2010, the market price of oil was $78.91 per barrel, and the price of natural gas was $5.08 per thousand cubic feet.

**Figure 3: MMS's Estimates of Technically and Economically Recoverable Resources of Oil and Gas in the North Aleutian Basin**




Source: GAO analysis of MMS data.

[a]Prices of oil are given in dollars per barrel (bbl).

[b]Prices of gas are given in dollars per thousand cubic feet (Mcf).

Before developing oil or gas in the North Aleutian Basin, industry must first find economically recoverable amounts of oil and natural gas, which can be an uncertain and costly endeavor. A study prepared for one oil company estimates that about 10 exploration wells would be needed to ascertain the presence of reserves in the North Aleutian Basin, and a company official told us that exploration wells could cost more than $100 million each. As an example of the risk involved in oil and gas exploration on the Alaska OCS, in the mid-1980s, after spending $426 million to acquire 96 leases in the St. George Basin planning area (west of the North Aleutian Basin planning area), oil companies drilled 10 exploration wells and found no economically recoverable amounts of oil and gas. According to one industry official, there could be only a 10 to 20 percent chance of finding substantial amounts of oil and gas in the North Aleutian Basin, which is not unusual for a frontier area like the basin.

Even if industry were to find substantial oil and gas in the basin, billions more dollars would need to be invested in infrastructure for development and production. Some infrastructure, including a 10,000-foot runway in Cold Bay, exists near the basin to support oil and gas development, although MMS's hypothetical development scenario for the basin includes the following infrastructure, which does not exist in the region:

- four to six offshore oil and gas development platforms,
- undersea oil and natural gas pipelines to bring the oil and gas to an offshore hub,
- 25 miles of undersea pipeline from the offshore hub to the northern coast of the Alaska Peninsula,
- 50 miles of overland pipeline across the Alaska Peninsula to Balboa Bay,
- a liquefied-natural-gas plant in Balboa Bay,[9]
- a tanker terminal in Balboa Bay for liquefied-natural-gas and oil tankers, and
- liquefied-natural-gas tankers to transport the natural gas to the U.S. West Coast.

Building such infrastructure—as other natural gas projects have shown—is expensive. For example, costs for developing the natural gas field off the coast of Sakhalin Island, Russia, have exceeded $20 billion. In 2001, MMS cited an estimate for constructing a liquefied-natural-gas facility and marine terminal at Valdez, Alaska, of nearly $3 billion (in 1999 dollars). The developer of a proposed liquefied-natural-gas plant in British Columbia, Canada, has estimated that this project would cost about $4 billion. According to MMS geologists, the cost of constructing the infrastructure needed to develop North Aleutian Basin oil and gas is likely to be in the billions of dollars.

Industry is nevertheless interested in developing North Aleutian Basin petroleum resources. During the surge in energy prices through the mid-

[9]Transporting natural gas from the North Aleutian Basin to markets on the West Coast would require liquefying the natural gas. Liquefying natural gas reduces its volume by more than 600 times, making it more practical to store and transport.

2000s, 17 companies expressed interest in a lease sale in the basin. Although oil and natural gas prices have now declined from those peaks, an oil company official told us that recent fluctuations in energy prices have little bearing on his company's interest in the basin. He said that his company takes the long view, seeing the North Aleutian Basin as an area that will probably not begin production for at least another 10 or 15 years but could potentially remain in production for another 25 years. In other words, the quantities may well offer a substantial incentive to companies to bid on a lease sale and take the substantial monetary risk to explore and perhaps develop the basin.

## Offshore Oil and Gas Development Involves an Extensive Process to Meet Federal Requirements, and MMS Has Taken the First Steps in the North Aleutian Basin

In planning and managing offshore oil and gas development to meet its requirements under federal law, MMS follows a long and complex series of steps combining resource development with assessing potential environmental and cultural impacts. Throughout this process, MMS is to meet the federal requirements articulated in the OCS Lands Act—which outlines four stages for oil and gas development—while also complying with NEPA and other laws aimed at protecting environmental and cultural resources at each stage. MMS officials stated that it would take at least 10 years to complete all four stages.

### MMS Has Numerous Responsibilities under the OCS Lands Act and Other Key Federal Laws

During offshore oil and gas development, MMS has numerous responsibilities under several federal laws. Under the OCS Lands Act, MMS's process for oil and gas development consists of the following stages: (1) preparing a nationwide 5-year oil and gas development program, (2) planning for and holding a specific lease sale, (3) approving a company's exploration plan, and (4) approving a company's development and production plan. Within these four stages, several other laws—NEPA, in particular, along with the Endangered Species Act and Magnuson-Stevens Fishery Conservation and Management Act, among others—require that potential effects of offshore oil and gas development on environmental and cultural resources be addressed (see table 2). For instance, under the Endangered Species Act, MMS must consult with the U.S. Fish and Wildlife Service and NOAA Fisheries Service about the potential impact of oil and gas activities, such as accidental oil spills or seismic exploration, on threatened and endangered species.

**Table 2: MMS's Key Responsibilities during the Four Stages of Offshore Oil and Gas Development**

| Stage | Law | Responsibilities |
|---|---|---|
| Stage 1: Preparing a nationwide 5-year program | OCS Lands Act | Interior to prepare and maintain a national oil and gas leasing program, which consists of a 5-year schedule indicating the size, timing, and location of proposed offshore leasing activities. |
| | NEPA | MMS begins process of identifying and assessing the likely environmental impacts of the proposed 5-year program. |
| Stage 2: Planning for and holding a specific lease sale | OCS Lands Act | Interior solicits bids and then awards leases for offshore areas identified in the 5-year program. |
| | NEPA | MMS to evaluate the likely environmental impacts of the proposed oil and gas lease sale. |
| | Endangered Species Act | MMS to consult with the U.S. Fish and Wildlife Service or NOAA Fisheries Service if there is reason to believe that the lease sale could adversely affect a federally protected species or its habitat.[a] |
| | Magnuson-Stevens Fishery Conservation and Management Act | MMS to consult with NOAA Fisheries Service if a lease sale could adversely affect essential fish habitat, which is generally defined as areas necessary to fish for spawning, breeding, feeding, or growth to maturity. |
| | National Historic Preservation Act | MMS to take into account the effect of a proposed oil and gas lease sale on any historic property included, or eligible for inclusion, in the National Register of Historic Places; such properties include those on the ocean floor, such as archaeological sites. |
| Stage 3: Approving a company's exploration plan | OCS Lands Act | Interior to consider a lessee's exploration plan for approval before a lessee may begin exploration activities. |
| | NEPA | MMS to evaluate the likely environmental impacts of proposed exploration activities. |
| | Coastal Zone Management Act | MMS to ensure that proposed exploration activities are consistent to the maximum extent practicable with states' coastal zone management programs. |
| Stage 4: Approving a company's development and production plan | OCS Lands Act | Interior to consider a lessee's development plan for approval before a lessee may begin any development and production activities. |
| | NEPA | MMS to evaluate the likely environmental impacts of proposed development and production activities. |
| | Coastal Zone Management Act | MMS to ensure that proposed development and production activities are consistent to the maximum extent practicable with states' coastal zone management programs. |

Source: GAO analysis of federal laws.

[a]The U.S. Fish and Wildlife Service has the responsibility for implementing the Endangered Species Act for all terrestrial and freshwater species, as well as for polar bears, walrus, sea otters, and sea turtles when on land and all birds, including seabirds. NOAA Fisheries Service is responsible for implementing the Endangered Species Act for most marine fish, such as salmon; cetaceans (whales and dolphins); pinnipeds (seals and sea lions); and other marine life.

Under NEPA, federal agencies are to evaluate the likely environmental effects of actions they propose to carry out or to permit. NEPA has two principal purposes: (1) to ensure that an agency carefully considers detailed information concerning significant environmental impacts and

(2) to ensure that this information will be made available to the public.[10] Specifically, before initiating any oil and gas planning, leasing, exploration, or development activities, MMS is to evaluate likely environmental effects. Generally, the scope of those activities requires MMS to use either an environmental assessment (a concise analysis developed if the environmental impact of the proposed action is unknown or has the potential to be significant) or, if the actions are likely to affect the environment significantly, a more detailed environmental impact statement.[11] The regulations for environmental impact statements include multiple opportunities for public comment and require plans for mitigating the impacts. Environmental assessments and environmental impact statements are intended to help decision makers understand the environmental consequences associated with proposed activities, such as those associated with oil and gas exploration and development.

## For the North Aleutian Basin, MMS Has Implemented the First Stage under the OCS Lands Act and Begun the Second Stage

In 2007, MMS issued a 5-year program under the OCS Lands Act, stage 1, and, as of December 2009, was planning a North Aleutian Basin lease sale under stage 2. For the basin, the agency has not moved beyond stage 2.

### Stage 1: MMS Included the North Aleutian Basin in Its 2007-2012 5-Year Program

To develop a 5-year program under the OCS Lands Act, MMS is to consider several principles, including future national energy needs, location-specific factors such as "environmental sensitivity and marine productivity," and balance between the potential for oil and gas discovery and adverse environmental and coastal impacts; MMS must also conduct leasing activities to ensure a fair monetary return to the federal government. In addition, MMS is to seek comments from various state and public stakeholders and to prepare and release an environmental impact statement evaluating the likely effects of the 5-year program. During the nearly 2 years between announcement of plans to develop the 2007-2012 program and the time the program went into effect in July 2007, MMS completed the environmental impact statement and held numerous public

[10]See, for example, *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989).

[11]A proposed federal action may be categorically excluded from a detailed environmental analysis if it meets certain criteria that a federal agency has previously determined as having no significant environmental impact. 40 C.F.R. 1508.4.

meetings with stakeholders across the country, including several in communities near the North Aleutian Basin. In recognition of the basin's ecological and natural resources, MMS also convened a meeting of scientific experts and other stakeholders to help determine what information was available and what information was needed about the basin and about potential oil and gas leasing and development activities.[12]

In 2007, MMS finalized its 2007-2012 5-year program. The program was legally challenged under the OCS Lands Act in 2008, and the Alaska portion was sent back by the court to the agency for further action. The challenge, brought on various grounds, related to oil and gas exploration and production in the Beaufort, Bering, and Chukchi seas. In April 2009, the District of Columbia Circuit Court of Appeals held that MMS had relied on an insufficient environmental sensitivity assessment in preparing its analysis under the OCS Lands Act. Specifically, the court found that MMS's comparison of the environmental sensitivity of different areas of the OCS was incomplete because it examined only the effects of oil spills on shorelines and failed to look at offshore effects as well. The court directed MMS to redo its environmental sensitivity assessment and reassess the timing and location of planned leasing before any leasing activities could occur on the Alaska OCS, including in the North Aleutian Basin. Accordingly, as of October 2009, MMS had completed an expanded environmental sensitivity assessment, which includes analysis of offshore resources such as marine mammals, birds, and fish. As of February 2010, a decision by the Secretary of the Interior on the status of the 2007-2012 program—including the planned 2011 lease sale in the North Aleutian Basin—was pending, and no further Alaska OCS lease sales could occur until the Secretary had issued this decision.

To incorporate other offshore leasing areas that were recently opened to development, MMS in August 2008 proposed a new draft 5-year program, for the period 2010-2015. The proposed new program includes two lease sales in the North Aleutian Basin, the one already slated for 2011 and another in 2014. MMS released its draft of this program in January 2009 for public comment, and the Secretary of the Interior extended this comment period for an additional 180 days, to September 21, 2009. As of November 2009, MMS was still evaluating the proposed program. When this

[12]The Alaska OCS Region's Environmental Studies Section has used the findings from this meeting to choose research to fund in the Bering Sea. From 2006 through 2009, MMS funded six studies focused on the North Aleutian Basin, totaling more than $6.2 million, and plans to start another five studies in fiscal year 2010.

evaluation is finished, MMS is to submit recommendations to the Secretary for approval, which would include a decision on both lease sales in the North Aleutian Basin.

### Stage 2: MMS Has Begun Planning for a Specific Lease Sale in the North Aleutian Basin

After final approval of a 5-year program, MMS may hold lease sales under the OCS Lands Act for the areas included in that program. Laws protecting environmental and cultural resources—such as marine and coastal birds, wetlands, and subsistence harvest by Alaska Natives—figure prominently at this stage. Under NEPA, before holding a lease sale, the agency is to evaluate the proposed sale's likely environmental effects, describing various alternatives for oil and gas development and their potential impacts. In addition, since oil and gas development could potentially affect species protected by the Endangered Species Act, MMS must also consult with the U.S. Fish and Wildlife Service and NOAA Fisheries Service to assess the likely effects on threatened and endangered species. To mitigate any adverse effects, these agencies may make recommendations for modifying MMS's proposed activity.

As of December 2009, MMS was proceeding with lease sale planning for the North Aleutian Basin. Working in cooperation with the Aleutians East Borough,[13] the Alaska OCS Region anticipates releasing an environmental impact statement in July 2010 for public comment. Once MMS has issued its final environmental impact statement—and provided that litigation over the 2007-2012 5-year program has been resolved and the program has been approved—MMS anticipates that a lease sale for the North Aleutian Basin will occur in November 2011. MMS has also begun consulting with the U.S. Fish and Wildlife Service and NOAA Fisheries Service on threatened and endangered species, such as the North Pacific right whale. Officials from these agencies have indicated that their interaction with MMS has at this stage been limited, but they and MMS anticipate more consultation as MMS proceeds further into the lease sale planning process. Until the 2011 lease sale is held, however, MMS remains in stage 2 for the North Aleutian Basin.

### Stage 3: After Holding a Lease Sale, MMS Is to Consider an Exploration Plan for Approval

Before allowing a lessee to explore for oil and gas in its leased area, MMS is to review and approve the lessee's exploration plan, in accordance with the OCS Lands Act, and complete a NEPA analysis. The exploration plan

[13]Equivalent to a county in the contiguous 48 states, the Aleutians East Borough is located on the Alaska Peninsula, adjacent to the North Aleutian Basin. The borough is cooperating with MMS to identify mitigation measures for the potential lease sale.

describes all exploration activities planned by the lessee, including the location of wells and timing of activities. After MMS receives an exploration plan, it has 30 days to approve, disapprove, or require modifications to the plan. NEPA again comes into play before MMS can approve an exploration plan. MMS generally performs an environmental assessment to assess the impacts of activities such as drilling test wells or conducting seismic surveys. If the environmental assessment indicates that the planned activities would significantly affect the environment, as defined under NEPA, the agency prepares an environmental impact statement and may seek modifications to the exploration plan. In addition, MMS may coordinate with the U.S. Fish and Wildlife Service and NOAA Fisheries Service to ensure that MMS and lessees comply with the Marine Mammal Protection Act. MMS is also to ensure that the exploration plan is consistent with the affected state's coastal zone management program. If, as planned, MMS holds a lease sale for the North Aleutian Basin in 2011—and barring unforeseen delays—industry exploratory activities are unlikely to begin in the basin earlier than 2012 or 2013.

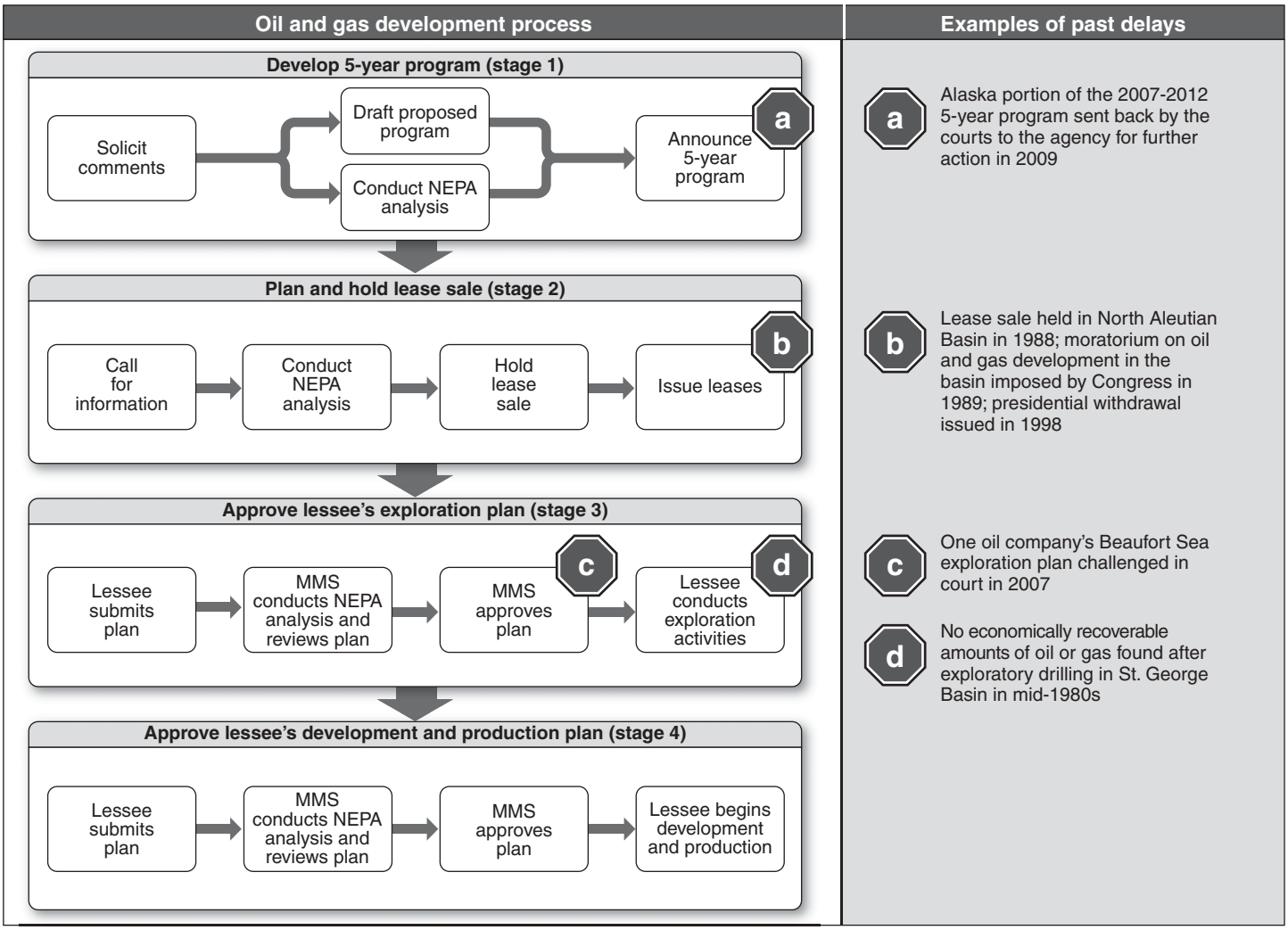
### Stage 4: After Exploration, MMS Is to Consider a Development and Production Plan for Approval

MMS is to review, consider, and approve a lessee's development and production plan before allowing a lessee to proceed past the exploration stage. Should a lessee decide to proceed with development and production on its leases, the development and production plan it submits to MMS is to describe the number of wells the company plans to drill and where these wells will be located, the type of structures to be used, and how oil and natural gas will be transferred to shore. Under the OCS Lands Act, MMS is to assess environmental impacts in considering this plan and also to ensure that the development plan is consistent with the affected state's coastal zone management plan. On the basis of the final environmental analysis, MMS is to approve, disapprove, or seek modifications to the development and production plan, as needed. After approval, the lessee would have to submit applications for a host of other plans and permits, such as permits for pipelines, platforms, and air or water emissions. In addition, activities to construct infrastructure and facilities, such as overland pipelines, a liquefied-natural-gas plant, and a tanker terminal—which would be necessary to develop the North Aleutian Basin—involve long and complex permitting processes of their own. For example, for a new onshore liquefied-natural-gas facility, as many as 100 permits and approvals may be required from various federal, state, and local government agencies. Given these considerations, MMS estimates that in an ideal situation, without any unforeseen delays, the first oil production in the North Aleutian Basin would not occur until at least 2020, and the first gas production would not occur until 2025.

## Delays Can Occur at Each Stage

Delays can occur at any—and have occurred at most—of the OCS Lands Act's four-stage oil and gas development process in the Alaska OCS Region (see fig. 4). MMS officials have told us, for example, that it can take more than 10 years to complete all four stages, even without delays. In part because MMS's Alaska OCS Region oversees oil and gas development in a place that is not only environmentally sensitive but also relied on by Alaska Natives for subsistence hunting and fishing, a number of legal challenges have taken place over the past 2 decades. In addition, other delays have halted the oil and gas development process. For example, MMS conducted a lease sale for the North Aleutian Basin in October 1988. But after the *Exxon Valdez* oil spill in 1989, the federal government suspended oil and gas development in the basin for nearly 20 years through congressional and presidential actions. As a result, the leases awarded in the 1988 lease sale were never explored or developed, and Interior bought back the inactive leases in 1995.

**Figure 4: Delays in the Oil and Gas Development Process in MMS's Alaska OCS Region**




Source: GAO analysis.

Note: NEPA analysis figures prominently at each of the four oil and gas development stages. MMS has not proceeded beyond stage 2 in the North Aleutian Basin.

## MMS Faces Challenges in Meeting Federal NEPA Requirements in the Alaska OCS Region

MMS's Alaska OCS Region faces several challenges in carrying out its responsibilities under NEPA, in particular, in providing comprehensive NEPA guidance and, within the regional office, ensuring sharing of information needed to complete NEPA analyses.

### MMS Lacks Comprehensive NEPA Implementation Guidance

Interior's policy manual requires its agencies to prepare NEPA handbooks providing guidance on how to implement NEPA in an agency's principal program areas.[14] MMS, however, has not yet issued comprehensive guidance in the form of a NEPA handbook, although it has provided limited guidance and is consolidating and further developing this guidance. The agency has posted NEPA guidance on its Web site, but this guidance is general in nature and does not outline key steps that environmental assessment staff are to take in implementing the law. For example, the guidance provides one paragraph about assessing environmental impacts of oil and gas activities, not detailed instructions that could lead an analyst through the process of drafting an environmental assessment or environmental impact statement. The Web site directs MMS analysts to NEPA guidance intended for all Interior agencies, but this guidance is not tailored to MMS's principle program areas, including offshore oil and gas development. In particular, relevant MMS guidance does not address key factors for staff to consider in analyzing environmental impacts, such as the significance of the environmental effects of proposed actions, the region's cultural and environmental sensitivities, or procedures to be followed during management reviews of NEPA analyses.

According to MMS officials, MMS has not developed a comprehensive NEPA guidance handbook, in part because the agency is small and can rely instead on institutional knowledge and also because they believe a handbook would be difficult to keep current. They added that, unlike other Interior agencies that have NEPA handbooks, such as the U.S. Fish and Wildlife Service, MMS has fewer field offices across the country and fewer staff writing NEPA documents. Managers in the Alaska OCS Region told us that they rely on institutional knowledge of experienced staff to help new staff learn the process. Yet the Alaska OCS Region's Environmental

[14]Department of the Interior, *Department Manual*, part 516, chapter 6 (6.4.A.1) (2004).

Assessment Section has experienced high staff turnover in recent years. From 2003 to 2008, 11 to 50 percent of the analysts in that section left each year, resulting in nearly complete turnover within a staff that ranged from 10 to 14 people. Only 2 of the 11 Environmental Assessment staff we interviewed in May 2009 had been in the office longer than 3.5 years, and more than half the staff had been in the office less than 1.5 years.

The lack of a comprehensive NEPA guidance handbook, combined with high staff turnover, leaves the process for meeting NEPA requirements ill defined for the analysts charged with developing NEPA documents. For example, nearly half of the 11 analysts in the Environmental Assessment Section, in particular, told us that the process for writing NEPA analyses is unclear and that a NEPA handbook would help. Several analysts, recalling prior experience in other Interior agencies that had handbooks, said that having a handbook clarified ambiguity and offered step-by-step guidance. We spoke with the two then-current[15] and two former NEPA coordinators—staff hired to direct the NEPA process in the Alaska OCS Region—who all stated that the lack of guidance made it very difficult to do their job. All four coordinators had had previous NEPA experience but told us that they were not given adequate guidance on how MMS is to implement NEPA with respect to its own program areas.

The lack of a comprehensive NEPA guidance handbook also leaves unclear MMS's policy on what constitutes a significant environmental impact. Determining whether an impact is significant is important because such determinations may trigger additional requirements for federal agencies. Senior officials at the Council on Environmental Quality[16]—which oversees and works with agencies in reviewing and approving their NEPA procedures and has issued regulations on when a federal action significantly affects the environment under NEPA[17]—told us that they encourage agencies to develop "rigorous and replicable" criteria for what constitutes a significant effect. As an example, officials in the council cited the Federal Aviation Administration's work with a professional society to systematically develop and set quantitative criteria for significant

[15]We spoke with the two Alaska OCS Region staff members who were the NEPA coordinators as of May 2009; according to MMS, both coordinators have since left their positions.

[16]The Council on Environmental Quality is an office within the Executive Office of the President tasked with the development of environmental policies and initiatives.

[17]40 C.F.R. § 1508.27.

environmental effects from aircraft noise. Nevertheless, we found considerable variation among MMS's OCS regions in how they assess what constitutes a "significant" environmental impact. For example, according to a manager in MMS's Pacific OCS Region, which manages oil and gas development in Southern California, the Pacific region defines significance criteria—such as biologically important effects on species' behavior patterns—for assessing the significance of an impact on a given environmental resource because such criteria help the public understand MMS's logic in environmental assessments and environmental impact statements, including how the agency weighed information in coming to its conclusions. In contrast, although MMS's Alaska OCS Region defined significance criteria in an environmental impact statement as recently as 2007,[18] Alaska OCS Region management officials told us they no longer plan to do so. For example, the region's most recent draft environmental impact statement on lease sales in the Beaufort and Chukchi seas, issued in November 2008, defines "impact descriptors"—"negligible, minor, moderate, and major"—and states that it will not use a "significance threshold," or "line in the sand."[19] Alaska OCS Region officials explained that explicit significance criteria are difficult to develop because they must be species specific; criteria must also be developed for economic effects. For example, they noted, the inability to recover from harm after one generation may be significant for one species, whereas the inability to recover after three generations may be significant for another. MMS headquarters officials also observed that the relative dearth of information on some of the region's species makes it even more difficult to develop significance criteria. Given the triggering effect of the term *significant* in NEPA analyses, however, without explicit criteria specifying what constitutes a significant impact, it can be unclear how the Alaska OCS Region decides whether and when triggers have been met.

In addition, the lack of a comprehensive NEPA guidance handbook that details procedures for preparing and documenting NEPA-required analyses to address environmental and cultural concerns leaves MMS

[18]Minerals Management Service, *Final Environmental Impact Statement: Oil and Gas Lease Sale 193 and Seismic Surveying Activities in the Chukchi Sea*, OCS EIS/EA MMS 2007-026 (Anchorage, 2007).

[19]Minerals Management Service, *Draft Environmental Impact Statement: Beaufort and Chukchi Sea Planning Areas: Oil and Gas Lease Sales 209, 212, 217, and 221*, OCS EIS/EA MMS 2008-0055 (Anchorage, 2008).

vulnerable in litigation stemming from those concerns.[20] As the agency has acknowledged, in recent years, MMS has been the target of at least nine lawsuits challenging its decision making, generally with regard to the adequacy of the agency's environmental analysis. When deciding NEPA cases, the courts may examine an agency's thoroughness in executing the NEPA process, including the steps the agency follows in preparing environmental analyses and drawing conclusions based on those analyses. For example, in 2008 the Ninth Circuit Court of Appeals voided MMS's approval of one oil company's exploration plan for the Beaufort Sea.[21] In that case, the court found that MMS's conclusions in its environmental assessment of the plan did not follow from the rest of the analysis. Specifically, the court explained, after "lengthy discussion on concerns and gaps in the data, the [environmental assessment's] abrupt conclusion that any potential effects will be insignificant is unsubstantiated." As a result, the oil company withdrew this exploration plan and submitted a new one, and MMS had to prepare a new environmental analysis of the revised exploration plan, resulting in, according to estimates by the Energy Information Administration, at least a 3-year delay—after the company had already spent hundreds of millions of dollars preparing for exploration—and considerable rework for both parties.

[20]In *Center for Biological Diversity v. Interior* [563 F. 3d 466 (D. C. Cir. 2009)], the D.C. Court of Appeals sent the Alaska portion of MMS's 2007-2012 OCS 5-year leasing program to Interior for additional analysis of relative environmental sensitivity and marine productivity. A second lawsuit, *Native Village of Point Hope v. Salazar* [No. 1:08-cv-00004-RRB (D. Alaska)], challenged a specific lease sale (lease sale 193) in the Chukchi Sea under the prior 5-year leasing program. Further action on both these suits was stayed pending the Secretary of the Interior's completion of the required analysis. In December 2009, two suits were filed concerning lease sale 193, challenging an oil company's exploration plan approved by MMS on October 16, 2009. A coalition of environmental and Alaska Native groups filed a petition for review in the Ninth Circuit Court of Appeals on December 15, 2009, alleging that MMS failed to adequately consider potential impacts of that decision in violation of NEPA, the OCS Lands Act, and the Endangered Species Act. A second lawsuit was filed the same day on similar grounds by another Alaska Native group and the Alaska Eskimo Whaling Commission.

[21]*Alaska Wilderness League et al. v. Kempthorne*, 548 F.3d 815 (9th Cir. 2008). The court later vacated and withdrew its opinion without explanation. *Alaska Wilderness League et al. v. Kempthorne*, 559 F. 3d 916 (9th Cir. 2009). Subsequently, the court dismissed the appeal as moot because the exploration plan had been withdrawn and MMS had rescinded its prior approval of the plan. *Alaska Wilderness League et al. v. Kempthorne*, 571 F.3d 859 (9th Cir. 2009). See also Minerals Management Service, Alaska OCS Region, *Environmental Assessment: Shell Offshore Inc., Beaufort Sea Exploration Plan*, OCS EIS/EA, MMS 2007-009 (Anchorage, 2007).

In addition to litigation, MMS has also been vulnerable to allegations by stakeholders and former MMS scientists of suppression or alteration of their work on environmental issues. Some former MMS scientists, for example, have alleged that their scientific analyses were removed or altered during reviews by Alaska OCS Region management officials.[22] For example, an internal MMS e-mail refers to text drafted by a subject-matter expert for a 2006 environmental assessment, warning that nonnative species introduced to Alaskan waters may become invasive and suggesting specific measures to mitigate the ecological impacts of such introductions. As documented by Public Employees for Environmental Responsibility, the analysis of invasive species was deleted during management review. In the final draft of the 2006 environmental assessment,[23] the discussion of the topic was moved into a section titled "Resources Not Considered Further," indicating that the potential effects of invasive species merited no further examination. According to the subject-matter expert who drafted this text, MMS management officials made their revisions over his objections, without providing documentation that supported their revisions. Although management may have had valid reasons for these revisions, absence of a process, spelled out in a NEPA guidance handbook, for how MMS staff is to review scientific findings and document these reviews has subjected MMS to allegations of scientific misconduct.

## Within the Alaska OCS Region, Information Is Selectively Shared

On the basis of past directives issued by the Office of Management and Budget and by Interior, MMS headquarters in April 2008 issued an agencywide policy memorandum outlining its overarching policy on information use and sharing. The memorandum is explicit about the types of information to be shared and with whom. Specifically, the memorandum directs that all reports submitted by industry—including proprietary information—should be shared within one working day with MMS staff involved in environmental analyses. The memorandum states that proprietary data must be protected from inappropriate release to

[22]Internal MMS e-mails and draft documents from current and former MMS scientists have been made public by the organization Public Employees for Environmental Responsibility—a national nonprofit alliance of local, state, and federal scientists; law enforcement officers; land managers; and other professionals—whose stated mission is to uphold environmental laws and values.

[23]Minerals Management Service, *Final Programmatic Environmental Assessment: Arctic Ocean Outer Continental Shelf Seismic Surveys, 2006*, OCS EIS/EA MMS 2006-038 (Anchorage, 2006).

parties outside of MMS and directs MMS managers to ensure that staff are thoroughly familiar with the agency's procedures for sharing such data.

In addition, in an attempt to clarify agency policy for ensuring that scientific quality is maintained throughout decision making, the memorandum specifies that management revisions to environmental analyses are to be finalized only after documented discussions take place with the relevant subject-matter experts. The memorandum further directs regional offices to document procedures for communicating with and soliciting feedback from subject-matter experts on any revisions management deems necessary, so as to ensure the quality of both the final analysis and any conclusions based on that analysis.

We found, however, that practices within the Alaska OCS Region were not consistent with the policy outlined in this memorandum; rather, information was shared selectively. Indeed, in speaking with Alaska OCS Region staff and, later, with regional management officials, we found that the 2008 memorandum itself was not shared beyond management-level officials until we asked the managers about it.[24] We found instead that the Alaska OCS Region shares information—including information related to NEPA analyses—on a need-to-know basis. In a July 2008 e-mail to Alaska OCS Region managers, the official who oversees the Alaska OCS Region's Environmental Studies and Environmental Assessment sections described procedures for sharing proprietary as well as nonproprietary information among the staff in these sections and between sections. This e-mail identified a single staff member as "the designated recipient" for several types of reports and information, both proprietary and nonproprietary. According to the e-mail, access by other Alaska OCS Region staff was to be on a need-to-know basis, as determined by regional management, and documented by signed confidentiality statements. Although the e-mail listed several classes of reports that the designated recipient was to receive, this designated recipient told us that he routinely received only one class of reports—those from marine mammal observers placed on industry ships. He did not receive other listed reports, even if he was asked to comment on the environmental impacts of actions in those reports.

[24]When we asked then-current Alaska OCS Region Environmental Assessment Section staff in July 2009 if they knew about the memorandum, we found that only 1 person out of the 12 whom we asked was aware of it. Shortly after we spoke with management officials, an e-mail went out to all Alaska OCS Region staff, notifying them of the memorandum and including an intranet link to its location.

The Alaska OCS Region's information-sharing practices contrast with practices in other MMS regions. MMS headquarters officials said that in an agency as small as MMS,[25] the "need to know" does not apply; although staff must know what information is proprietary and how to handle it, they must also work together and have a free flow of information. Likewise, a Pacific OCS Region manager said it is essential for all analysts to have access to all information, including proprietary information. According to a Gulf of Mexico OCS Region manager, analyses in environmental assessment drafts prepared by that regional office are always completed by subject-matter experts in the field being analyzed, and all analysts asked to comment on draft text in their area of expertise are provided access to relevant information, including proprietary information. The office does not require confidentiality statements from staff working on environmental analyses, although it does restrict information access to staff working on a given project.

In explaining their information-sharing practices, Alaska OCS Region managers told us that a need-to-know policy allows them to properly protect proprietary information. They also said that they need to manage access to lease-sale scenario information—for example, numbers of wells, pipelines, and so on, which provide a feasible set of conditions for purposes of environmental analysis—so that everyone involved in NEPA analyses works from identical scenarios. Alaska OCS Region managers further explained that, in part because of MMS's heavy workload overall, they feel they have to manage staff time so deadlines can be met.[26] Our interviews with staff analysts in the Environmental Assessment Section, however, indicated that they believed that these information-sharing practices hindered their ability to complete sound environmental analyses under NEPA. For example, five of them reported that they and other subject-matter experts had had difficulty obtaining clear development scenario information, including, for at least one analyst, specific scenario information on the proposed 2011 North Aleutian Basin lease sale. As a result, the analyst said, he was not certain where a pipeline would cross the Alaska Peninsula or what other infrastructure would be needed, which

[25]MMS has about 1,800 employees and 3 regional offices responsible for oil and gas development, as compared with, for example, Interior's Bureau of Land Management, which has a budgeted total of about 10,600 full-time-equivalent employees and 32 field offices involved in oil and gas development.

[26]MMS's OCS program workload has increased in recent years. Interior's *Fiscal Year 2008 Annual Performance and Accountability Report* cited MMS as issuing nearly twice as many leases nationwide in 2008 as in 2006, without any growth in related staff.

made it difficult for him to determine the impacts of the proposed lease-sale for the forthcoming environmental impact statement.

## Conclusions

No matter where it occurs, oil and gas development can be a high-risk, high-reward endeavor with numerous potential monetary and nonmonetary costs—for the nation, local communities, industry, and ecosystems—particularly in remote offshore areas such as the North Aleutian Basin. Although MMS has, over the years, faced delays that were largely out of its control, it *can* control the quality and integrity of its environmental analyses. For instance, Interior directs its agencies to prepare NEPA handbooks providing guidance on how to implement NEPA; MMS, however, has not issued such a handbook. As a result, the agency cannot ensure the consistent implementation of NEPA within or across regional offices, and it leaves itself vulnerable with regard to litigation and allegations of scientific misconduct. Moreover, MMS directs its OCS regions to share industry data and proprietary reports with staff involved with NEPA-required environmental analyses and discuss any management revisions to an analysis with relevant subject-matter experts. The Alaska OCS Region, however, does not share information in accordance with this policy, and some of its own scientists have alleged that their findings have been suppressed. Comprehensive, detailed NEPA guidance, along with full implementation of its 2008 information-sharing policy, could strengthen MMS's NEPA analyses and enhance the agency's credibility among stakeholders as it strives to achieve balance between oil and gas development and environmental protection.

## Recommendations for Executive Action

To help MMS meet federal requirements in assessing environmental impacts of offshore oil and gas development, we recommend that the Secretary of the Interior direct the Director of the Minerals Management Service to strengthen the agency's NEPA procedures and ensure implementation of its agencywide April 2008 information-sharing policy by taking the following two actions:

- Develop and set a deadline for issuing a comprehensive NEPA handbook providing guidance on how to implement NEPA and periodically update and revise this guidance as needed. Such guidance should detail procedures for conducting and documenting NEPA-required analyses, including how determinations of significance are to be made and how scientific findings are to be reviewed.

- Take appropriate steps to ensure that the Alaska OCS Region follows the policy for sharing or otherwise making information, including proprietary information, available to all staff involved in the technical or environmental review of that information.

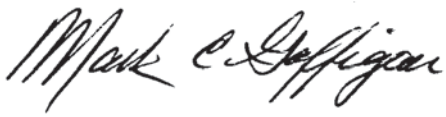
## Agency Comments

We provided a draft of this report to the Department of the Interior for review and comment. The department generally agreed with our findings and fully concurred with our recommendations. In its written comments, Interior described steps it plans to take to implement these recommendations. With regard to our first recommendation about issuing a comprehensive NEPA handbook, Interior wrote that MMS will issue comprehensive NEPA guidance and bring all guidance documents together in one place. According to the letter, MMS has determined that Web distribution would be most effective to ensure the guidance is accessible and readily revisable. This guidance is to be issued by December 31, 2010, and used by MMS headquarters and regions alike. In addressing our second recommendation on information sharing, Interior wrote that MMS will take appropriate steps to ensure that the Alaska OCS Region follows MMS's 2008 policy for making information available, including proprietary information. Interior's letter states that the Alaska OCS Region is to issue a directive to all MMS Alaska employees, describing the general responsibilities of supervisors and managers, as well as specific steps employees must take if they find any deficiency with respect to their ability to do their jobs. Finally, this directive is also to define accountability for compliance with its provisions. Appendix II reproduces Interior's comment letter in full.

As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies to the Secretary of the Interior, the Director of the Minerals Management Service, appropriate congressional committees, and other interested parties. In addition, this report will be available at no charge on the GAO Web site at http://www.gao.gov.

If you or your staff members have any questions about this report, please contact me at (202) 512-3841 or gaffiganm@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this are listed in appendix III.

Sincerely yours,



Mark E. Gaffigan
Director, Natural Resources and Environment

# Appendix I: Objectives, Scope, and Methodology

The objectives of this review were to (1) describe what is known about the estimated quantity of oil and gas in the North Aleutian Basin and the infrastructure needed to develop and deliver it to market; (2) identify the key steps the Minerals Management Service (MMS) is to take to meet federal requirements and directives for developing oil and gas on the outer continental shelf (OCS); and (3) identify the challenges, if any, MMS faces in meeting these federal requirements in its Alaska OCS Region.

To address these objectives, we reviewed relevant laws, regulations, policy memorandums, case law, and other documentation. We also met with MMS officials at the headquarters and Alaska OCS Region offices to obtain estimates of oil and gas quantities in the North Aleutian Basin, as well as information pertaining to federal requirements for and challenges to developing oil and gas in the North Aleutian Basin. In addition, we interviewed federal officials from the U.S. Fish and Wildlife Service, the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NOAA Fisheries Service), and the Environmental Protection Agency. We also spoke with officials from Alaska state agencies, including the Alaska Department of Environmental Conservation, Department of Fish and Game, and Department of Natural Resources. For perspectives from entities that are directly involved in North Aleutian Basin issues, we met with representatives from the oil and gas industry; environmental organizations; and native tribes, associations, and corporations. We also met with residents and government officials in the communities of Cold Bay, Nelson Lagoon, and Sand Point, Alaska.

To describe estimated quantities of oil and gas in the North Aleutian Basin, we interviewed geologists in MMS's Alaska OCS Region who were knowledgeable about the processes MMS uses to estimate OCS resources, and we reviewed the reports disseminated by MMS containing its estimates for oil and gas resources in the North Aleutian Basin. In addition, we met with representatives from two petroleum companies that operate in Alaska.

To identify the key steps MMS is to take to meet federal requirements and directives for developing oil and gas, we reviewed several laws, including the Outer Continental Shelf Lands Act, National Environmental Policy Act (NEPA), Coastal Zone Management Act, Endangered Species Act, and Marine Mammal Protection Act, among others. We reviewed relevant regulations and notices published in the *Federal Register* and other agency documentation. We interviewed officials in MMS's headquarters and Alaska OCS Region who are knowledgeable about the steps MMS takes to comply with the regulatory framework for offshore oil and gas

development. We also spoke with officials from the U.S. Fish and Wildlife Service and NOAA Fisheries Service about the extent to which they have begun consultations with MMS regarding a potential lease sale in the North Aleutian Basin. Additionally, we spoke with officials from the Alaska Department of Environmental Conservation, Department of Fish and Game, and Department of Natural Resources. We also spoke with representatives of the Aleutians East Borough about their perspectives on oil and gas development in the basin and their cooperation with MMS in developing an environmental impact statement for a North Aleutian Basin lease sale.

To identify the challenges, if any, that MMS faces in meeting federal requirements in the Alaska OCS Region, we spoke with MMS headquarters and Alaska OCS Region management officials and separately interviewed analysts in the Alaska office. Specifically, during May 2009, we conducted individual interviews with all 19 staff in the Alaska OCS Region's Environmental Assessment and Environmental Studies sections, using a set of semistructured interview questions developed with the assistance of a GAO survey specialist. Our interview questions were open-ended in nature and covered a range of broad topics, including (1) how MMS obtains and incorporates necessary information into its environmental assessments, (2) the steps MMS takes to ensure objectivity in its assessments, and (3) the parts of the NEPA process that function well at MMS and those in need of improvement. We also held some follow-up interviews to clarify issues raised during the initial interviews. We performed a content analysis to identify common themes across the 19 interviews. Additionally, we reviewed a nonrandom, nongeneralizable sample of 8 of the 11 environmental assessments or environmental impact statements issued by this office from 2003 through 2008; we also reviewed the 1985 environmental impact statement for the last lease sale proposed for the North Aleutian Basin, as well as other technical reports obtained from the Alaska OCS Region. To compare practices across MMS regions, we spoke with officials from MMS's Gulf of Mexico and Pacific OCS regions. We also spoke with officials at the Department of the Interior's Office of Environmental Policy and Compliance, the Council on Environmental Quality, the Bureau of Land Management, and the U.S. Geological Survey. To determine staff turnover in the Alaska OCS Region, we reviewed staffing data for calendar years 2000 through 2008. According to MMS, the staffing data came from the Federal Personnel Payroll System, which handles payroll and personnel data for federal agencies. To assess the reliability of these staffing data, we sent questions to MMS officials knowledgeable about the database and performed basic logic testing for obvious inconsistencies in the data's accuracy and

completeness. We determined that these data were sufficiently reliable for our limited use of them in this report.

We conducted this performance audit from September 2008 to March 2010, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

# Appendix II: Comments from the Department of the Interior

United States Department of the Interior
OFFICE OF THE SECRETARY
Washington, DC 20240

MAR - 1 2010

TAKE PRIDE IN AMERICA

Mr. Mark Gaffigan
Director, Natural Resources and Environment
Government Accountability Office
441 G Street, NW
Washington, D.C. 20548

Dear Mr. Gaffigan:

Thank you for the opportunity to review and comment on the Government Accountability Office (GAO) draft report entitled, *Offshore Oil and Gas Development: Additional Guidance Would Help Strengthen the Minerals Management Service's Assessment of Environmental Impacts in the North Aleutian Basin* (GAO-10-276). In the draft report, GAO makes two recommendations for the Minerals Management Service (MMS). The Department generally agrees with your findings, fully concurs with your two recommendations, and will implement them as indicated below.

National Environmental Policy Act (NEPA) Guidance: The MMS will issue comprehensive NEPA guidance and is working to finalize pending guidance and bring all guidance documents together in one place. The MMS has determined that Web-based distribution would be most effective to ensure that all guidance is easily accessible, readily revisable, and scalable to the appropriate level of detail. Such guidance will be issued by December 31, 2010, and used by MMS's Headquarters and Regions alike and will be revised as needed.

Information Sharing: The MMS will take appropriate steps to ensure that the Alaska Outer Continental Shelf (OCS) Region follows the 2008 MMS policy for making information available, including proprietary information, to all staff involved in the technical or environmental review of that information. The Alaska OCS Region will issue a directive to all MMS Alaska employees. The directive will clearly describe the general responsibilities of supervisors and managers, including the responsibility to ensure employees are provided with all information required to effectively and efficiently perform their duties and responsibilities. Additionally, the directive will describe the specific steps that employees must take if they find any deficiency with respect to their ability to do their jobs, including the inability to access proprietary information when necessary for adequate technical or environmental reviews. Finally, the directive will define accountability for compliance with its provisions.

We appreciate GAO's insights and recommendations to strengthen MMS's assessment of environmental impacts in the North Aleutian Basin. If you have any questions, please contact Andrea Nygren, MMS Audit Liaison Officer, at (202) 208-4343.

Sincerely,

Wilma A. Lewis
Assistant Secretary
Land and Minerals Management

# Appendix III: GAO Contact and Staff Acknowledgments

## GAO Contact

Mark E. Gaffigan, (202) 512-3841 or gaffiganm@gao.gov

## Staff Acknowledgments

In addition to the contact named above, Ernie Hazera, Assistant Director; Pedro Almoguera; Eric Bachhuber; Ellen W. Chu; Cindy Gilbert; Karen Keegan; Joshua Ormond; Madhav S. Panwar; Katrina Pekar-Carpenter; Jena Sinkfield; Kiki Theodoropoulos; Barbara Timmerman; Stephanie Toby; and Arvin Wu made key contributions to this report.

## GAO's Mission

The Government Accountability Office, the audit, evaluation, and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

## Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's Web site (www.gao.gov). Each weekday afternoon, GAO posts on its Web site newly released reports, testimony, and correspondence. To have GAO e-mail you a list of newly posted products, go to www.gao.gov and select "E-mail Updates."

## Order by Phone

The price of each GAO publication reflects GAO's actual cost of production and distribution and depends on the number of pages in the publication and whether the publication is printed in color or black and white. Pricing and ordering information is posted on GAO's Web site, http://www.gao.gov/ordering.htm.

Place orders by calling (202) 512-6000, toll free (866) 801-7077, or TDD (202) 512-2537.

Orders may be paid for using American Express, Discover Card, MasterCard, Visa, check, or money order. Call for additional information.

## To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Web site: www.gao.gov/fraudnet/fraudnet.htm
E-mail: fraudnet@gao.gov
Automated answering system: (800) 424-5454 or (202) 512-7470

## Congressional Relations

Ralph Dawn, Managing Director, dawnr@gao.gov, (202) 512-4400
U.S. Government Accountability Office, 441 G Street NW, Room 7125
Washington, DC 20548

## Public Affairs

Chuck Young, Managing Director, youngc1@gao.gov, (202) 512-4800
U.S. Government Accountability Office, 441 G Street NW, Room 7149
Washington, DC 20548

Please Print on Recycled Paper