

Written Testimony of Michael F. Hirshfield, Ph.D.
Committee on Natural Resources
*Outer Continental Shelf Oil and Gas Strategy and Implications of the
Deepwater Horizon Rig Explosion*
May 27, 2010

Introduction

Thank you for the opportunity to provide testimony before the House Natural Resources Committee. I want to start by thanking Chairman Rahall and his fellow committee members for their efforts in addressing the daunting issues of energy policy, climate change, and the many threats faced by our oceans and marine life from habitat loss to ocean acidification. I am the Senior Vice President for North America and Chief Scientist for Oceana, a global ocean conservation organization headquartered here in Washington, D.C. that works to restore and protect the world's oceans. In addition to our headquarters in Washington DC, Oceana also has staff located in Alaska, California, Georgia, Massachusetts, New York, Oregon, and Tennessee, as well as international offices in Belize City, Belize; Brussels, Belgium; Madrid, Spain; and Santiago, Chile. We have 300,000 members and supporters from all 50 states and from countries around the globe. Our mission is to protect our oceans and the fish and wildlife that depend on them.

Today, I will present testimony regarding the need to protect our oceans from the increasingly visible threats posed by offshore oil and gas exploration and development in the United States. The ongoing Deepwater Horizon drilling disaster is a clear testament that offshore drilling is a dirty and dangerous business, one that threatens jobs, both in the fishery and tourism industry, and also one that threatens public health and the health of marine ecosystems.

Oceana testified in front of the House Natural Resources committee twice last year on this very issue. Our board member, Ted Danson, testified before the full Committee, and our Pacific Science Director, Dr. Jeffrey Short, testified at a joint hearing of the Subcommittee on Energy and Mineral Resources and Subcommittee on Insular Affairs, Oceans and Wildlife. In both instances, Oceana stated clearly and for the record that we oppose the expansion of offshore oil and gas drilling. (*Testimonies of Ted Danson and Dr. Jeffrey Short attached hereafter as Appendix A and Appendix B*).

Today, we echo that call and take it a step further: we must suspend all pending approvals and ban all new drilling in the Outer Continental Shelf indefinitely. In place of expanded offshore oil and gas activities, the United States should begin the transition to a clean energy economy. By pursuing carbon-free alternatives, such as offshore wind and solar energy, combined with conservation and fuel efficiency improvements such as those contemplated by President Obama's announcement last week, the US can step away from the frenzied pursuit of offshore drilling, which has demonstrably put our vital ocean ecosystems at risk. The United States should promote clean energy industries that will allow us to finally break our fossil fuel addiction, stimulate our economy and become an

exporter of energy technology. And by doing so, we can stop placing the profit interests of the oil industry above those of the fishing industry, the tourism industry, human health and well being, and marine ecosystems.

Lessons from the Deepwater Horizon Drilling Disaster

The Deepwater Drilling Disaster in the Gulf of Mexico is a tragedy for the families of the workers killed, the ocean ecosystem, and coastal economies. It clearly illustrates to us that the business of offshore drilling is dirty and dangerous.

As Congresswoman Donna Edwards, from my home state of Maryland, said so eloquently, “You can’t stop the spilling, until you stop the drilling.” Now more than ever, it is time for the U.S. to recognize that the risks of offshore drilling far outweigh the benefits it may provide. Despite the oil industry’s statements, disasters like this will happen again unless we act to prevent them.

Our oceans give essential protein to nearly half the world’s population. United States recreational and commercial fisheries combined supply over 2 million jobs. Coastal tourism provides 28.3 million jobs and annually generates \$54 billion in goods and services. More drilling means more oil spills, more lost jobs, more contaminated beaches, and more ecosystem destruction. Our marine ecosystems and the communities that depend on them are threatened by the short and long term toxic effects of oil.

Oil spills happen. These spills range from small, steady leaks to large catastrophic blowouts and they occur at every stage in oil production from the exploration platform to the oil tanker to the pipeline and storage tanks. The impacts to fish and wildlife and coastal communities are numerous and well documented. To date, the Deepwater Drilling Disaster has pumped millions of gallons of toxic oil in to the Gulf of Mexico.

The spill resulting from the Deepwater Drilling Disaster threatens Gulf coastlines from the Louisiana Bayou to the Florida Keys. The resulting oil slick now covers almost 16,000 sq miles of ocean. Fisheries have been closed in state waters of Louisiana, and over 48,000 square miles of federal waters have been closed to commercial fishing. The damage has only begun, and we may not know the true cost of this catastrophe for many years or possibly decades.

For the past month, millions of gallons of oil have gushed into the Gulf of Mexico, overwhelming all available response capability. More than 800,000 gallons of toxic dispersants have been applied at the surface and below it. Federal officials are still struggling to obtain accurate information about the spill’s impacts. What is certain is that there will be impacts. More than one month in, responding agencies still have more questions than answers.

Staff of the National Marine Fisheries Service, the National Ocean Service, and the U.S. Fish and Wildlife Service have all publically expressed concerns about the movement of oil and oil dispersal contaminants to upland habitats and their effect on estuarine and freshwater habitats.

The timing of the spill coincides with the loggerhead sea turtles' migration from foraging grounds to nesting grounds. The historic average of sea turtle strandings for the month of May is 47. The current turtle stranding rate is significantly higher than past rates. The cause of mortality is still unknown for many of the turtles, but the corpses have been taken for necropsy. Since April 20th, there have been 162 sea turtle strandings in the Gulf of Mexico in which 156 sea turtles have died. Most of the stranded sea turtles were juvenile Kemp's Ridley.

This spill will impact the drifting pelagic community and near shore species such as snapper, grouper, Spanish and King mackerel, and shrimp. Since April 20th, there have been 12 bottlenose dolphin strandings, all 12 of which died.

Both onshore and open ocean species of birds are vulnerable to the impacts of oil. Depending on where the oil reaches shore, beach nesters, such as terns and plovers and marsh dwellers are vulnerable. Even if oil doesn't end up in nesting habitat, other indirect impacts could result, such as effects on food supply.

Much of the wildlife impact will remain unseen. Oil can have long term effects on feeding, reproduction and overall health of the animal. Also, put simply, many of the carcasses simply will not wash ashore. Nevertheless, we are now beginning to see the first images of seabirds, sea turtles, and other species affected by oil. Unfortunately, these images, and the harm to ocean life that they portray, will be continuing for the foreseeable future.

The economic impacts on the Gulf Region's commercial and recreational fisheries could be staggering. Gulf fisheries are some of the most productive in the world. In 2008, according to the National Marine Fisheries Service, the commercial fish and shellfish harvest from the five U.S. Gulf states was estimated to be 1.3 billion pounds valued at \$661 million. The Gulf also contains four of the top seven fishing ports in the nation by weight and eight of the top twenty fishing ports in the nation by dollar value. Commercially-important species and species groups in the Gulf of Mexico include: blue crab, stone crab, crawfish, groupers, menhaden, mullets, oyster, shrimp, red snapper, and tunas.

Gulf landings of shrimp led the nation in 2008, with 188.8 million pounds valued at \$367 million dockside, accounting for about 73% of U.S. total. Louisiana led all Gulf states with 89.3 million pounds. State waters in Louisiana are now closed to fishing and 48,005 sq mi of federal waters, which is just under 20% of the Gulf of Mexico exclusive economic zone, are closed to fishing. The Gulf also led in production of oysters in 2008 with 20.6 million pounds of meats valued at \$60.2 million and representing 59% of the national total.

The Benefits of Offshore Drilling are not Worth the Risks

While the oil industry clearly stands to benefit from offshore drilling, we all bear the risk. In this case, BP has transferred a tremendous amount of risk to residents of the Gulf coast in exchange for no clear benefits. Although offshore oil and gas production can have tremendous impacts on marine life, it will not contribute significantly to lower prices at the pump or energy independence.

Offshore Drilling Provides No Relief from High Gasoline Prices and Will Not Create Energy Independence.

Additional offshore oil drilling will not lower gas. In 2009, the United States Department of Energy (DOE) estimated that by 2030, gasoline prices would be only three pennies less than if previously protected ocean areas remained closed.

The U.S. Department of Energy predicts has found that at peak production in 2030 drilling in the Atlantic, Pacific and Eastern Gulf of Mexico would produce 540,000 barrels a day, which would account for 2.5 percent of daily energy demand in the United States. Thus, regardless of the oil produced offshore, the United States will still import the vast majority of its oil from other countries. The increased production will not diminish this dependence or prices at the pump significantly. The United States Department of Energy (DOE) estimates that even if we opened all offshore areas to drilling, the U.S. would still import about 58% of its oil supply. Currently, about 62% of the crude oil supplied to the United States comes from foreign sources, with the top two suppliers being Canada and Mexico. The United States simply does not have enough domestic oil to reduce its dependence on imports, much less to fulfill its demand.

The only way to become truly energy independent is to end our addiction to oil. The best way to eliminate foreign oil dependence is to eliminate dependence on all oil by developing alternative sources, rapidly switching to plug-in and electric vehicles and phasing out oil consumption in other portions of our economy like home heating and electricity generation.

Additionally, the development of offshore wind energy off of the East Coast and Great Lakes could create thousands of jobs. Europe already has 19,000 people employed in the offshore wind industry and the European Wind Energy Association expects nearly 300,000 to be employed by the offshore wind industry by 2030. We should be demanding, and our energy policy should be promoting, similar job growth here in the United States. It has been estimated that a \$1 million investment in energy efficiency and renewables creates three times the number of jobs created if that same \$1 million was invested in the oil industry.

The plain facts speak for themselves--expanded drilling will not lower gas prices or make us energy independent. The Deepwater Drilling Disaster illustrates that the harm posed by oil and gas activities in the Outer Continental Shelf dramatically outweighs any perceived benefits that can be gained by expanding drilling.

Oil and Gas Activities have Tremendous Impacts on Marine Life

Accidents inevitably accompany all stages of offshore production, and these accidents can be catastrophic. We are now seeing in the Gulf of Mexico that there is no available technology or capability to respond to a spill, particularly a gusher of the magnitude we are witnessing in the Gulf.

We should not be surprised by the Deepwater Drilling Disaster. Well blowouts are certainly not uncommon, and even the latest advances in drilling technology have not prevented them.

On 21 August, 2009, the Montara oil rig suffered a blowout and began spilling oil. The well was located in 250 ft of water, between East Timor and Australia. It took four attempts over ten weeks to block the leak and it was eventually stopped when mud was pumped into a relief well. The Australian Department of Resources, Energy and Tourism estimated up to 2,000 barrels per day (or up to 85,000 gallons) were spilled over that time, five times the estimate given by the responsible party, the PTT Exploration & Production Public Company Limited. In the end, the Wilderness Society estimated the oil slick to have affected 19,000 square miles of ocean.

The Deepwater Drilling Disaster is not an isolated incident and offshore oil drilling remains extremely dangerous. Since 2006, the United States Minerals Management Service (MMS) has reported at least 21 offshore rig blowouts, 513 fires or explosions offshore and 30 fatalities from offshore oil and gas activities in the Gulf of Mexico. Additionally, in 2007 the MMS reported that from 1992 to 2006 there were 5, 671 wells drilled, and 39 blowouts. It is important to note that these blowouts occurred at a variety of depths and in a variety of environments. A blowout is not a rare occurrence, and it can happen anywhere, not just in the deep waters of the Gulf of Mexico.

Once a spill occurs, little can be done to clean it up. According to the National Academy of Sciences, “No current cleanup methods remove more than a small fraction of oil spilled in marine waters, especially in the presence of broken ice.” We have been drilling in the Gulf of Mexico for more than 60 years. Although we are using the latest advances in drilling technology, pushing the limits of the physical environment, the Deepwater Drilling Disaster shows that we still lack the technology and planning to effectively respond to large oil spills. As Robert Bea, a professor at U.C. Berkeley and former Shell employee stated, “we are still chasing it around with Scott towels.”

Industry would have us believe that the process of offshore oil and gas extraction is completely benign. Consider this statement made by the American Petroleum Institute in a 2009 letter to the Committee on Natural Resources:

“Over the past 40 years, improved practices and equipment have enabled the industry to significantly strengthen its offshore environmental performance and meet or exceed federal regulatory requirements.”

Or these by David Rainey, Vice President, Gulf of Mexico Exploration BP America Inc., in his testimony to the Senate Energy and Natural Resources Committee on November 19, 2009.

“Advances in drilling technologies and production systems have been significant. They include extended reach drilling, drilling in deeper waters, and to greater depths. These advances enable more production while reducing environmental impacts and allowing for efficient use of existing facilities and infrastructure.”

“Many of the technology examples discussed ... have enabled a robust track record of environmental stewardship and can reduce or even eliminate the visual ``footprint`` of offshore energy operations.”

But offshore drilling isn't safe just because the industry says it is. We can all see with our own eyes that there are limits to the oil industry's accident prevention capability – whether they are technological or managerial limits, the industry simply can not guarantee safe operation.

As Oceana's Jeff Short, one of the world's experts on the chemistry of oil and its impacts, stated in his testimony at that same Senate Committee hearing in November, 2009:

Oil development proposals in the marine environment are often presented and discussed as engineering challenges, without sufficient regard for the complexity of the environment in which they would occur, or the often dubious assumptions implicit in assessments of environmental risks and cleanup and mitigation technologies. Oil spill contingency plans are treated as exercises in damage control, taking for granted that not all damage can be controlled, and based on the faulty assumption all potential outcomes are adequately understood, predictable, and manageable. The truth of the matter is that our understanding of how oil behaves in the environment, the ways it affects organisms, and how well response and mitigation measures actually work in the field is still largely unknown.

The Deepwater Drilling Disaster shows us that current technology and regulation cannot prevent what we now know is inevitable--a major spill of oil into the marine environment, and one which is to date beyond our ability to control.

The Arctic is Particularly Vulnerable—and Response Capability is Nonexistent

The risks from these activities are particularly acute in the Arctic, where the oceans play a critical role in the culture of Native peoples, there is little available response, rescue, or clean-up capability, and little information about the environment or impacts from oil development is available (*see* Appendix B)

Because there is a significant lack of information, both from western science and documented local and traditional knowledge of Arctic peoples, it is impossible to ensure that exploration drilling will not harm the health of Arctic marine ecosystems or

opportunities for the subsistence way of life. Managers do not have the baseline information needed to conduct quantitative risk assessments of activities or, if a spill were to occur, assess impacts to hold companies accountable for damages. This lack of information is evident in the cursory and general environmental reviews that have been conducted and the errant generalizations that the Minerals Management Service (MMS) has made.

Further, response, rescue, and clean-up capabilities are virtually nonexistent for the challenging conditions in Arctic waters, which can include sea ice, stormy seas, extreme cold temperatures and long periods of darkness. There is no demonstrated capability to clean up spilled oil in icy waters. The nearest Coast Guard response and rescue vessels would be nearly 1,000 miles away, and the Coast Guard has stated publicly that it could not respond to a spill. Particularly given the fact that we must dedicate all available resources to limiting damage in the Gulf of Mexico, it would be irresponsible to allow parallel risky activities in Arctic waters.

It would be impossible to quickly mobilize additional emergency spill response vessels into the Arctic Ocean due to the area's remoteness and difficult operating conditions. As Commandant Thad W. Allen, National Incident Commander for the coordinated response to the *Deepwater Horizon* blowout, testified before a Senate committee last August, the Coast Guard has "limited response resources and capabilities" in the event of a major spill in the Arctic Ocean. In comparison, BP reported that it had mobilized response vessels, including 32 spill response vessels with a skimming capacity of more than 170,000 barrels per day and an offshore storage capacity of 122,000 barrels within forty-eight hours of the *Deepwater Horizon* blowout. On the morning of May 16, Unified Command reported that "650 response vessels...were responding on site, including skimmers, tugs, barges and recovery vessels...in addition to dozens of aircraft, remotely operated vehicles and multiple mobile offshore drilling units." It would be impossible to deploy the same resources that quickly in the Arctic. Yet, despite this massive mobilization of resources, the oil gushing from the *Deepwater Horizon* blowout remains unchecked to date.

The events surrounding the Deepwater Drilling Disaster provide significant new information that requires the Minerals Management Service (MMS) to reanalyze Shell's drilling plans. The new information goes to the heart of the decision to approve Shell's plans, and accordingly the approval of any drilling should be suspended pending reconsideration of the environmental analysis in light of the *Deepwater Horizon* spill.

Shell has made efforts to distinguish its proposals from the Gulf tragedy. It is clear, however, that the same technologies and standards that failed so tragically in the Gulf have been or will be applied in the Arctic. (See Appendix C, Final Response to Shell, May 19, 2010) Given the obvious deficiencies and commitment to wholesale reevaluation of our oil and gas program, there is no reason to allow Shell to take these risks with our Arctic resources. The *Deepwater Horizon* was an exploration well, just like those proposed by Shell for this summer. Moreover, MMS's approvals were made using the same standards and processes that allowed the *Deepwater Horizon* tragedy and under the same cloud of collusion that has been revealed by the GAO, New York Times,

and other media outlets. (See Appendix D, Offshore Oil and Gas Development: Additional Guidance Would Help Strengthen the Minerals Management Service's Assessment of Environmental Impacts in the North Aleutian Basin, Government Accounting Office, March 2010, attached hereafter; see also Appendix E, William Yardley, Arctic Drilling Proposal Advanced Amid Concern, New York Times, May 19, 2010, attached hereafter; see also Appendix F, Juliet Eilperin, U.S. agency overseeing oil drilling ignored warnings of risks, Washington Post, May 24, 2010.)

It is Time to Kick the Habit and Move to a Clean Energy Economy

It is clearly time for a bold Congressional effort to transition America into its much needed clean energy future. In doing so, Congress should focus in part on clean sources of ocean energy such as wind, solar, and geothermal power. The Deepwater Drilling Disaster shows us that now, more than ever, our oceans and the communities that rely on them on a daily basis need a clean energy future. Future generations of Americans deserve oil free beaches and oceans that are an abundant source of food, wildlife and clean energy.

The Deepwater Drilling Disaster presents us with a glimpse of what our oil addiction is doing to our country. It is costing us jobs, valuable destroying natural resources and distracting us from developing innovative new technologies that can empower us both by lighting our homes and stimulating our economies.

The United States Department of Energy has projected that we can generate 20% of electricity demand from renewables by 2030. Offshore wind could provide 20% of this amount. Supplying even 5 percent of the country's electricity with wind power by 2020 would add \$60 billion in capital investment in rural America, provide \$1.2 billion in new income for farmers and rural landowners, and create 80,000 new jobs. This effort has started, as the United States added enough wind power in 2007 alone to provide electricity to more than a million homes.

Let's stop pretending that offshore drilling lowers the price of gasoline. A more effective way to bring down the price of gasoline – without the risks of catastrophic environmental and economic damage – is to raise fuel economy standards for new cars and trucks sold in the United States, as called for last week by President Obama. Making cars that get 35.5 miles per gallon of gas, as federal regulations will require, will save a dollar per gallon by 2030. Compare this with the 3 cents a gallons savings the EIA says drilling all our offshore oil reserves will bring over that same period. We should be working as rapidly as possible to electrify our transportation and home-heating systems, using electricity provided by carbon-free sources like wind and solar.

Congress could make tremendous progress in creating a new energy economy right now by passing legislation that would stimulate this process. For example, setting a Renewable Electricity Standard (RES) would cut harmful carbon emissions while creating jobs and saving consumers' money, reducing costs for utilities and consumers. A

strong RES, such as mandating that 25% of electricity should be generated from renewable sources by 2025, can stimulate domestic investment in new renewable energy throughout the nation, creating jobs and income in rural areas, as well as in the high tech and manufacturing sectors. An RES would reduce the need to drill for onshore and offshore natural gas or to build new supporting infrastructure for these activities such as drilling rigs, pipelines, terminals and refineries.

It is critical that Congress continue to promote legislation that provides direct and substantial investment in clean energy component manufacturing to ensure that an adequate supply chain for goods essential to the renewable energy industry is created in the U.S. This legislation must direct federal funding for clean energy manufacturers to retool their facilities and retrain their workers to develop, produce, and commercialize clean energy technologies.

Recommendations

And so, today, on behalf of Oceana, I ask you to take three important steps that will steer our country in the right direction toward energy independence based on renewable, carbon-free energy sources and lasting protections for our coastal and marine environments.

The tragic events unfolding in the Gulf of Mexico have focused the nation's attention on the consequences of our addiction to oil. We need to understand what led to the BP blowout and spill and to prevent it from happening again. We need to understand not only the engineering problems of blowout preventers and potentially criminal behavior on the part of one or more corporations, but also the systemic regulatory failures of MMS to provide needed environmental impact analysis, appropriate industry oversight, and meaningful enforcement.

President Obama has appropriately pledged to task a special commission to undertake a thorough investigation and analysis of the failures that resulted to the *Deepwater Horizon* disaster. Damage from the ongoing oil spill in the Gulf of Mexico may last for generations, and a quick 30-day review is clearly not sufficient to credibly address the many technical and regulatory concerns that have been brought to light by this spill.

I. Immediately and indefinitely suspend all approvals, activities, and processes—other than current production—related to offshore drilling.

It is imperative to allow sufficient time for the President's commission and other investigative bodies to complete their investigations of the failures that led to the ongoing BP blowout and to apply the lessons learned from this disaster to prevent such a tragedy from ever happening again. For that reason, we must immediately suspend all approvals, activities, and processes—other than current production—related to offshore drilling. That suspension should remain in place while the independent review called for by the administration takes place and all changes recommended by it are implemented. All

approvals already granted must be re-evaluated based on the new information gathered by the commission and using any new processes recommended.

The most immediate and dramatic need is to suspend approval for drilling in the Arctic Ocean. The Minerals Management Service approved Shell's plans to drill exploration wells in the Chukchi and Beaufort Seas this summer. For the same reasons, proposals to open areas off the east coast of the United States must be put on hold indefinitely. We should not be considering opening new areas to leasing when it is clear that we cannot control companies that own leases on currently open areas.

To reiterate, Congress and President Obama must immediately and indefinitely suspend all approvals, activities, and processes—other than current production—related to offshore drilling. That process should begin with suspension of the approvals for Shell's exploratory drilling plans in the Chukchi and Beaufort Seas.

II. Ban new offshore drilling in the Outer Continental Shelf (OCS) and permanently protect all areas currently closed to leasing.

Since 1982, Congress and the President banned oil and gas leasing on much of our coasts. Those moratoria were allowed to lapse amidst the rancor of political campaigning in the last three years. Those protections should be restored and made permanent. This year's catastrophic disaster in the Gulf of Mexico illustrates that a ban on new drilling is essential to ensuring that a similar fate does not befall our other coasts, which, like the Gulf of Mexico, support important national assets in the form of valuable coastal economies and marine environments. As disturbing as this catastrophe has been for all of us, we need to make sure it never happens again. Congress should exercise its authority to permanently ban drilling offshore.

III. Finally, Congress must continue to pursue legislation that provides for a more efficient, clean, carbon-free, energy future that emphasizes the development of renewable energy.

By providing incentives for investments in clean energy such as offshore wind we could achieve the goals outlined above and possibly more. We could generate more energy, at a lower cost, from Atlantic offshore wind farms than from drilling all the oil in the Atlantic OCS areas. East Coast offshore wind electricity generating potential could supplant 70% of the East Coast's fossil-fuel generated electricity supply. Providing this quantity of clean energy could cut 335 million metric tons of carbon dioxide emissions annually - while limiting the risk of exposure to highly volatile energy expenses and creating three times as many jobs as offshore oil and gas development.

Summary

We must dramatically change course and move forward toward a future in which we rely upon affordable, carbon-free, renewable energy and end our dependence on oil. A “teachable moment” is upon us. What will we learn from the Deepwater Drilling Disaster? Ultimately, it is imperative for the United States to shift toward a future in which we rely upon affordable, carbon-free, renewable energy; one in which our oceans and the environment are healthy, and one that ensures our freedom from oil dependency. Part of this effort must include an emphasis on development of carbon-free technologies, including wind and solar power, in conjunction with improved energy efficiency.

Oceana urges the United States Congress to act swiftly to set up a rational policy to protect our oceans and the economies that depend on them from the impacts of offshore oil and gas drilling. Specifically, in light of Deepwater Drilling Disaster, Congress should take the following essential steps to set America on course toward a new energy economy:

- Immediately and indefinitely suspend all approvals, activities, and processes—other than current production—related to offshore drilling.
- Ban all new offshore drilling and provide permanent protection for the areas previously subject to congressional and presidential moratoria.
- Pass legislation that provides for a more efficient, clean, carbon-free, energy future that emphasizes the development of renewable sources of energy.

In the wake of the Deepwater Drilling Disaster, it is clear that none of the response options are good ones. What we have seen so far--burning the slick, use of toxic dispersants, booms and skimmers, a cofferdam, and a siphon--are all either lose-lose propositions or long shots that don't come close to stopping the spill, much less cleaning it up. Even stopping it at this point would be little solace to those depend on the oceans. We must avoid repeating this “no good option” predicament in the future, and we urge Congress to take the necessary steps outlined above to do so.

Written Testimony of Ted Danson
Committee on Natural Resources
Hearing on Perspectives on the Outer Continental Shelf
February 11, 2009

Introduction

My name is Ted Danson and I am a member of the Board of Directors of Oceana, a global ocean conservation organization based here in Washington, D.C. that works to restore and protect the world's oceans. Besides our headquarters in Washington DC, Oceana also has staff located in Alaska, California, Florida, Oregon, and Massachusetts, as well as international offices in Brussels, Belgium; Madrid, Spain; and Santiago, Chile. We have 300,000 members and supporters from all 50 states and from countries around the globe. Our mission is to protect our oceans and the fish and wildlife that depend on them.

Today, I will present testimony regarding the need to protect our oceans from the threats posed by oil and gas development on the outer continental shelf of the United States.

In the late 1980s, Occidental Petroleum proposed slant drilling off the coast of Santa Monica. I was very concerned about the impact this would have on the ocean environment so I teamed up with an environmental expert to fight it. I'm happy to report that we won. After that, to make sure our oceans would continue to be protected, we co-founded American Oceans Campaign, which worked for fifteen years to protect the oceans from oil drilling and other threats.

We later decided to expand the capacity of the American Oceans Campaign, by joining with Oceana, which is now the largest international organization focused solely on protecting the oceans.

And so today, I am here to testify against the opening up of the outer continental shelf of our oceans to oil and gas development. The same reasons that made more offshore oil drilling a bad idea when I founded the American Oceans Campaign are still valid today.

Oil and water don't mix. Our oceans give essential protein to nearly half the world's population. In the US, recreational and commercial fisheries combined supply over 2 million jobs. On top of that, coastal tourism provides 28.3 million jobs and annually generates \$54 billion in goods and services. Ecosystems are disrupted top to bottom by the short and long term effects of oil. More oil spills mean less abundant oceans. More oil spills mean fewer wonderful, pristine beaches. More oil spills mean fewer jobs.

While not intentional, spills happen. These spills range from small, steady leaks to large accidents and they occur at every stage in oil production from the oil platform to the oil tanker to the pipeline and storage tanks. Approximately 120 millions gallons of oil are discharged into the world's oceans every year from oil platforms, marine transportation,

vessel discharges and accidents. The impacts to fish and wildlife are numerous and well documented, often resulting in death.

In addition, more offshore drilling contributes to climate change by continuing our reliance on fossil fuels without creating a sustainable plan for the future. Additionally, as our oceans absorb carbon dioxide from the air, our oceans become more acidic. This ocean acidification could drastically change life as we know it. Our corals are already at risk. Additionally, the base of the food web may collapse due to the inability to create their shells in a more acidic ocean. Scientists estimate that the Southern Oceans could reach the tipping point as early as 2030. The collapse of the food web would be catastrophic for our oceans, our fisheries and everyone that depends on them for food and jobs.

Despite these risks to the oceans, it is hard to imagine why the perceived demand for expanded offshore drilling is so strong. The oil companies are asking Americans to take 100% of the risk for just a fraction of any benefits. In fact, even at peak production, the US Energy Information Administration admits that increased offshore drilling would account for less than 1% of the current energy demand in the US. It would amount to merely pennies in savings at the gas pump.

We should be thinking of our oceans as part of the solution to our nation's energy problems. Instead of offshore drilling, America needs science-based, precautionary management for our oceans. Our energy policies should fit within a consistent blueprint in which expanded conservation and improved energy efficiency are paired with facilitating renewable energy production to reduce our reliance on fossil fuels.

And so, today, I ask you to take three important steps that will steer our country in the right direction toward energy independence based on renewable and carbon-free energy sources.

First, it is critical that Congress quickly reinstate its moratoria on drilling in the Outer Continental Shelf (OCS) areas and Bristol Bay. Congress put the OCS moratorium in place in a bipartisan fashion every single year since 1982. Protection for Bristol Bay lapsed in 2004, and last year, due to the combined pressures of rising gas prices and an important election, the OCS moratorium was allowed to lapse.

Secondly, the threats to the Arctic demand a separate and distinct planning process. The OCS moratoria do not include any of the offshore areas in Alaska except Bristol Bay, and there has been a significant expansion of oil and gas activities in the Arctic during the last eight years. The ongoing activities must be stopped, until a comprehensive conservation and energy plan for the Arctic is put in place that is based on assessment of the unique Arctic ecosystem and a precautionary, science-based approach.

Finally, clean, carbon-free ocean energy such as wind, tidal, wave and current power must be a piece of our sustainable energy future. The Natural Resources committee should hold hearings on the renewable resources that our oceans offer.

Stimulating these energy sources creates jobs. Let's work with the oceans, not against them. Let's use their abundant wind and water energy to do things that will be good for the planet, and good for America. Let's give future generations oil free beaches and oceans that are an abundant source of food, wildlife and clean energy.

These points are further discussed in the testimony below:

I. Moratoria in the OCS areas and Bristol Bay are Needed to Protect our Oceans

Our oceans and coasts are now at greater risk than at any time since the early 1980's. Since 1982, Congress has protected Outer Continental Shelf water in the "Lower-48" with a moratorium on oil and gas activities. Congress also has enacted a moratorium to protect the sensitive areas of Bristol Bay, Alaska. In addition, Executive moratoria have been issued by two Presidents. In 1990, responding to the 11 million gallon *Exxon Valdez* oil spill, President George H. W. Bush used his executive authority to place a moratorium on any leasing or pre-leasing activity in Lower-48 offshore areas, including a small portion of the Eastern Gulf of Mexico. In a separate action President Clinton limited new drilling in the rich Bristol Bay fishing grounds in Alaska until 2012. Unfortunately, Congressional protections for Bristol Bay lapsed in 2004 and President George W. Bush lifted the Executive moratorium in 2007. The broader Congressional moratorium for the Lower-48 offshore areas was allowed to expire in 2008, and the Executive moratorium was lifted by President George W. Bush that same year. Reinstating both of the Congressional moratoria, including valuable habitat areas that were previously removed, such as Bristol Bay, must be a top priority. The Executive moratoria also should be reinstated to provide an added layer of protection for our marine life and coasts.

Offshore oil and gas activities create a myriad of threats to marine life including accidents, routine spills, disposal of wastes such as drilling muds and produced water, and noise pollution. The dramatic increase in shipping activity associated with platform maintenance, and increased risks of marine mammal collisions, also imperil marine species, many of which are already threatened or endangered.

Accidents inevitably accompany all stages of offshore production. The most typical causes of accidents include equipment failure, personnel mistakes, and extreme natural impacts from seismic activity, ice movements, hurricanes, and so on.

According to the National Academy of Sciences, "No current cleanup methods remove more than a small fraction of oil spilled in marine waters, especially in the presence of broken ice." Discharges associated with oil platforms, marine transportation, vessel discharges and accidents add around 120 million gallons of oil to the world's ocean every year, about a third of all inputs combined, including natural oil seeps.

The impacts of oil on wildlife are numerous. Wildlife can become coated in or ingest oil, which will often lead to a quick death. However, oil in the environment can also result in

non-lethal impacts, such as reduced reproduction and liver damage. These impacts are a death sentence for most animals in the wild, crippling their ability to avoid predators, find food and shelter and reproduce, all of which are essential to healthy functioning populations.

Toxic compounds in oil have a similarly varied set of effects. These can include reduced reproductive success due to interruption in breeding behaviors and damage to the reproductive and immune systems. Oil's toxic constituents can also damage a long list of organs in marine animals including the eyes, mouths, skin, nasal cavities, nervous system, red blood cells, liver, lungs and stomach. It can also cause damage to turtle and fish eggs, larvae and young, all leading to varied impacts on survival and reproductive success.

Oil can also affect the habitat of marine species, for example, by contaminating breeding beaches, estuaries, coral reefs, and seagrass and mangrove communities that are important feeding, breeding and resting grounds for a variety of species.

Finally, these impacts can linger for extremely long time periods creating continuous low-level exposure to oil in the form of tarballs, slicks, or elevated levels of chemicals that can cause cancer, developmental and reproductive impairments.

Besides accidents, daily offshore drilling operations also create other forms of pollution that affect marine and other wildlife. Offshore rigs can dump tons of drilling fluids, metal cuttings, including toxic metals (lead, chromium and mercury) and carcinogens (such as benzene, xylene and toluene and especially polycyclic aromatic hydrocarbons) into the ocean. Drilling muds are used to lubricate and cool the drill bit and pipe. One drilling platform normally drills between seventy and one-hundred wells and discharges more than 90,000 metric tons of drilling fluids and metal cuttings into the ocean. One well can potentially affect an area of 1000 meters when it comes to the discharge of these materials. Some studies suggest that drilling-related chemicals can stunt fish growth and affect breeding patterns. For example, cod exposed to this waste water had smaller eggs and delayed spawning time.

Produced water, fluid trapped underground and brought up with the oil and gas is another type of pollution that comes from drilling. Produced waters have high salinity and oil content, so discharges sink to the seafloor where they poison the rich communities of plants and animals that often reside there.

Factors other than pollutants can affect marine wildlife as well. For example, the firing of air guns during oil exploration sends such a strong shock across the seabed that it is believed to be capable of causing marine mammal strandings and increased whale mortality, decreased fish catch and damage to the hearing capacity of various marine species. For example, endangered grey whales were scared away from their only feeding grounds by unusually high noise levels at an oil and gas construction site near Sakhalin Island. Offshore oil rigs may also attract seabirds at night due to their lighting, flaring and aggregation of fish species, all of which can result in bird mortality.

Air pollution from offshore oil rigs also poses a health threat to people who live in proximity to offshore oil platforms. The Living Oceans Society reports that a single offshore operation emits as much air pollution as 7,000 cars driving fifty miles per day. Various types of toxic air pollutants are emitted in the process of flaring. This process releases more than 250 different contaminants into the atmosphere, many of which are known to cause health problems such as lung and heart disorders, cancers, asthma, and reproductive problems. These pollutants can affect people and animals living within 300 kilometers from the drilling platform.

The harm posed by oil and gas activities in the Outer Continental Shelf is too large to ignore. As a result, it is incumbent upon the Congress to reinstate the OCS moratoria as soon as possible.

A. Oil Production will worsen Climate Change.

As described in detail above, the harm posed by oil and gas activities in the Outer Continental Shelf provides as good a reason to place a moratorium on such activities today as it has provided everyday since 1982. However, the worsening threat of climate change imposes a new urgency. We now realize that the release of carbon dioxide and other greenhouse gases that results from the use of oil is creating even more harm to society than was previously understood. Indeed, the need to curtail releases of greenhouse gasses adds another layer to the already strong argument for preventing the expansion of oil and gas production on the Outer Continental Shelf by renewing the moratorium.

If left unchecked, human-caused emissions of greenhouse gases will have dramatic effects on the oceans and the planet as a whole. These impacts are already being felt in the Arctic, which is warming twice as fast as the rest of the planet. The loss and thinning of sea ice has made hunting and travel increasingly dangerous for indigenous peoples, and threatens the long-term survival of walrus, polar bears, ice seals and other ice-dependent animals as their essential habitat melts away. As these changes affect the Arctic, they will begin to affect all of us. Loss of sea ice and other changes in the Arctic may, in fact, amplify climate change on a worldwide scale and lead us closer to a tipping point, or a point of no return.

Climate change is also causing our oceans to acidify. Since the industrial revolution, the oceans have absorbed almost 450 billion metric tons of carbon dioxide from the atmosphere, or about one-third of all anthropogenic carbon emissions. The oceans continue to absorb approximately 30 million metric tons of carbon dioxide every day. At the same time, 80% of the heat that is added to the atmosphere is absorbed by the oceans. Without the oceans, global warming would be far worse than it already is. But this service is, at the same time, making our oceans sick. The increased acidity is expected to take its toll on corals and other species that make their shells and skeletons from calcium carbonate. In fact, the Intergovernmental Panel on Climate Change (IPCC) predicts that, under a business-as-usual scenario, we will likely have a mass extinction of corals by the

middle of this century. Impacts on marine life may be much more imminent in waters with lower carbonate availability such as those of the Arctic.

These changes are a direct result of our dependence on fossil fuels for energy. Thus, we must reduce our emissions of greenhouse gases and, to do so, we must move away from fossil fuels, such as oil, and instead toward conservation, energy efficiency and alternative energy. As evidenced by the effects already occurring in the Arctic and elsewhere, there is an urgent need for action now.

While we must begin this process now, reducing emissions of greenhouse gases will take time. The concentration of greenhouse gases in the atmosphere is increasing steadily as our emissions increase. We must first slow emissions of greenhouse gases and then take action to reduce their concentration in the atmosphere.

Expanding oil and gas production on the Outer Continental Shelf will only exacerbate the already damaging effects of climate change on our oceans.

B. Offshore Drilling Provides No Real Relief from High Gasoline Prices and Will Not Create Energy Independence.

The U.S. Energy Information Agency has found that at peak production in 2025 increased drilling offshore would produce 220,000 barrels a day, which would account for less than 1 percent of current energy demand in the United States. As the recent drop in oil prices demonstrates, global demand for oil drives the global price and since the market for oil is truly global—oil from the United States is sold all over the world and increased demand from countries like China and India will have a greater effect on the price of oil than the availability of oil from the OCS.

II. A Separate Planning Process is Necessary for the Arctic, Which is Particularly at Risk from Industrialization.

The Arctic is among the most beautiful and forbidding places on Earth. Life there swings between twenty-four hour daylight in the summer, and the long, dark, and cold months of the winter. The U.S. Arctic is home to tens of thousands of people and some of the world's most iconic wildlife species. Protected by sea ice, an unforgiving climate, and geographic remoteness, the ecosystems of the Arctic Ocean have been, until recently, among the Earth's least-disturbed. However, climate change is affecting the Arctic, which is warming nearly twice as fast as the rest of the world. This is forcing pronounced alterations of the Arctic environment that affect Arctic ecosystems and have worldwide implications.

Climate changes and, in particular, the decline of sea ice, in the Arctic are creating the potential for industrial activities, including oil and gas development. While historically, there has been little oil and gas activity in the U.S. Arctic waters, the situation has begun to change. Until recently, there were no leases owned in the Chukchi Sea, and the limited activities in the Beaufort Sea have been focused on the nearshore areas close to existing

infrastructure. We are now seeing a dramatic expansion of activities in the U.S. Arctic waters, and nearly 80 million acres of ocean are currently available for oil and gas leasing.

These areas are not covered by the Congressional or Executive moratoria discussed above, and leasing or exploration activities have begun in some places. These activities pose particular threats to Arctic marine ecosystems and the people who use and depend on them. Wells, pipelines and vessels create a substantial risk of an oil spill. No reliable method exists to clean up an oil spill in icy Arctic conditions, and such a spill would have catastrophic effects on important habitat for polar bears, other marine mammals, fish and recreational, spiritual and subsistence uses. In addition, the drill rigs, icebreakers, and seismic vessels necessary for oil and gas activities create substantial noise, which can cause marine mammals, such as bowhead whales, to stray far from their normal migration routes and feeding grounds, impact the animals' hearing and potentially cause other problems such as increased collisions with oil platform support vessels. The negative effects incurred by the bowhead whales from these activities are acutely felt by the Native communities that depend upon them.

Many of the adverse effects of oil development described above may cause particular harm in Arctic ecosystems already stressed by climate change. For example, the toxic muds and fluids that are often discharged into the oceans from rigs threaten already stressed populations of Arctic marine species and the greenhouse gases, black carbon soot and other pollutants released from rigs and vessels into the air, accelerate Arctic warming and ice loss compounding ecological stresses on these species.

In addition, decisions have been made in the absence of adequate scientific information. Particularly in light of the rapidly changing climate, much more information is needed about the sensitive Arctic ecosystems before prudent development should be allowed to proceed.

Because the previous moratoria did not include most of the offshore areas in Alaska, a separate and distinct planning process must be undertaken, ongoing activities stopped, and a comprehensive conservation and energy plan developed. The development of this plan would begin with a comprehensive scientific assessment of the health, biodiversity, and functioning of Arctic ecosystems, including the benefits and consequences of carrying out specific industrial activities. A science-based precautionary approach should be used to determine if those activities should be conducted and, if so, when, where and how.

III. We Must Shift Toward a Future in which We Rely Upon Affordable, Carbon-Free, Renewable Energy and End Our Dependence on Oil—Entirely!

We must shift toward a future in which we rely upon affordable, carbon-free, renewable energy; one in which our oceans and the environment are healthy, and one that ensures our freedom from oil dependency. Part of this effort must include an emphasis on

development of carbon-free technologies, including wind and solar power in conjunction with improved energy efficiency.

Halting the expansion of offshore drilling on the Outer Continental Shelf, and developing a comprehensive plan for all activities in the Arctic are important first steps in developing a comprehensive conservation and clean energy plan. In order to address a rapidly changing climate we must reduce our dependence on fossil fuels and shift to a future with affordable, renewable energy, a healthy environment, and freedom from the control of oil companies. Thus, we must begin to build a more sustainable foundation for the future based on renewable energy enabled by improved conservation and energy efficiency.

While we will not be able to stop oil use all at once, there are many conservation measures that could be put in place immediately to reduce our energy needs. For example, raising fuel efficiency standards just for light-duty vehicles could save 18.4 billion barrels of oil by 2030. Relatively small efforts such as properly maintaining vehicles and commuting one day less each week could result in substantial savings for families and reduce our oil consumption dramatically. If just 10% of U.S. passenger car travel were shifted to mass transit, 75 million tons less carbon dioxide would be emitted each year. Similarly, minor adjustments in our thermostats could reduce our greenhouse gas emissions by 35 million tons each year. Numerous other conservation measures, from improving the energy efficiency of newly constructed homes and other buildings to avoiding unnecessary short-distance travel could reduce U.S. emissions of greenhouse gases by 20% or more.

The United States Department of Energy has projected that we can generate 20% of electricity demand from renewables by 2030. Offshore wind could provide 20% of this amount. Supplying even 5 percent of the country's electricity with wind power by 2020 would add \$60 billion in capital investment in rural America, provide \$1.2 billion in new income for farmers and rural landowners, and create 80,000 new jobs. This effort has started, as the United States added enough wind power in 2007 alone to provide electricity to more than a million homes.

IV. Oceana urges Congress to reinstate the moratorium on offshore drilling, begin the development of a comprehensive conservation and energy plan for the Arctic, and move us towards a clean, carbon-free, renewable energy future.

These issues—oil, climate change, energy, and the ocean environment—are inextricably linked and must be addressed together. For example, reducing greenhouse gas emissions is necessary to protect our oceans; moving toward renewable energy sources is necessary to reduce greenhouse gas emissions; and we have an opportunity right now to make an unprecedented investment in the solution: renewable energy.

On behalf of Oceana, I urge the United States Congress to act swiftly to set up a rational policy to protect our oceans, coasts--and planet--from the impacts of offshore oil and gas

drilling. Specifically, in the first 100 days Congress should take the following essential steps to set America on course toward a new energy economy:

- Reinststate the moratorium on offshore drilling in U.S waters on the Outer Continental Shelf including sensitive ecosystems such as Bristol Bay, Alaska.
- Begin the development of a comprehensive conservation and energy plan for the Arctic that provides a bridge from oil to renewable energy and conservation. The plan should include a comprehensive scientific assessment of the health, biodiversity and functioning of Arctic ecosystems, as well as the benefits and consequences of specific industrial activities. Ongoing activities must be stopped, and a precautionary, science-based approach must be applied to all oil and gas leasing, exploration and development activities in Arctic waters to determine if those activities should be conducted and if so, when, where and how.
- Adopt legislation that provides for clean, carbon-free, renewable sources of energy, including ocean energy such as wind, tidal, wave and current power must be a piece of our sustainable energy future. The Natural Resources committee should hold hearings on the renewable resources that our oceans offer. Stimulating these energy sources creates jobs.

The challenge to provide affordable energy and a healthy environment is monumental, but there still is time for leadership and personal responsibility to turn the tide. We can and must think comprehensively and creatively about our oceans, energy, climate change, and the broader environment. U.S. leadership in this area will not only help stem the changes in our climate, it will help create a new energy economy that will benefit Americans and that can be exported to other nations, making the United States a leader and exporter of clean energy technology.

Written Testimony of Dr. Jeffrey Short
Committee on Natural Resources, Joint Subcommittee on Energy and Mineral Resources
and Subcommittee on Insular Affairs, Oceans and Wildlife
“Energy Development on the Outer Continental Shelf and the Future of our Oceans”
March 24, 2009

Good morning. I am the Pacific Science Director for Oceana, an international marine conservation organization dedicated to using science, law, and policy to protect the world’s oceans. Oceana’s headquarters are in Washington, DC, we have offices in five states as well as Brussels, Spain, and Chile. Currently, we have offices in Juneau and Kotzebue, Alaska, and bring more than 250 years of experience working and living in the state. Oceana has 300,000 members and supporters from all 50 states and from countries around the globe.

Today marks the 20th anniversary of the *Exxon Valdez* oil spill, the largest spill in our nation’s history and one of the most environmentally damaging spills in the world. Within a week of the incident, that spill and its effects were the focus of my research. Prior to joining Oceana, I spent more than 30 years as an environmental chemist studying oil pollution fate and effects as an employee of the National Oceanic and Atmospheric Administration (NOAA). In that role, I led numerous studies on the *Exxon Valdez* oil spill beginning a week after the incident through my retirement from NOAA last November (2008). I have a Master of Science degree in chemistry, and I wrote the doctoral dissertation for my PhD in fisheries on data generated by the spill. With more than 50 professional papers on the *Exxon Valdez* oil spill and related topics, I have advised governments in Canada, China, Korea, Norway and Russia on oil pollution issues, making me an internationally recognized authority on oil pollution.

I have dedicated most of my professional life to understanding the *Exxon Valdez* oil spill, and now to helping ensure that we do not repeat the mistakes of the past. We are coming dangerously close to heading down that path. More than 70 million acres offshore in Alaska either have been made available for oil and gas leasing, exploration, and development or are slated to be offered in the next few years. These areas are crucial for the lives of local residents, are among the most pristine ecosystems in the world, and are increasingly threatened by climate change and ocean acidification. They are also remote places in which no technology currently exists to respond to or clean up an oil spill effectively. Concurrently, there has been a push to allow oil drilling in offshore areas of the contiguous United States that have been closed to these activities for more than 25 years. Just last year, Congress and the president let lapse moratoria that protected these areas.

My testimony will focus on the Alaskan Arctic and, in particular, the Beaufort and Chukchi seas. I will summarize some of the scientific lessons we have learned from the *Exxon Valdez* spill, and their implications for future development of offshore oil and gas resources around Alaska. Together, these facts make a compelling case for a comprehensive, science-based, precautionary approach to oil and gas activities in the Arctic and for reinstating and extending the moratoria on offshore development in the United States.

I. Introduction

The stage was set for the *Exxon Valdez* oil spill nearly two decades before it happened with the decision in 1973 to authorize the trans-Alaska pipeline to the Valdez marine terminal. That decision was strongly opposed by the fishermen of Prince William Sound, who were skeptical of the assurances from the oil industry regarding all the modern safeguards that would be put into place. These fishermen feared, correctly it turned out, that a large spill could ruin their livelihoods. At the time, commercial fishing was the leading industry in the State of Alaska, employing more people and generating more revenue than any other private sector employer. Fisheries in Prince William Sound were especially well developed, harvesting enormous runs of pink, sockeye and other salmon, supplemented by halibut, herring and rockfish.

Prince William Sound is one of the great sheltered coastal embayments of North America, comparable in size to the Chesapeake Bay, Albemarle Sound, San Francisco Bay or Puget Sound, and comparable as well in its magnificent natural bounty. There is one big difference: Prince William Sound is not seriously impacted by sustained coastal population growth and industrialization. As such, it supports very high populations of local and migratory birds and marine mammals, from puffins to peregrine falcons, and sea otters to killer whales. It is a major stop on the Pacific flyway, where birds land after long flights across the Gulf of Alaska to re-provision themselves and either reproduce in the immediate area or move on to the vast breeding grounds of the western and northern Alaskan coastal plains. Their timing coincides with the spring phytoplankton bloom in the ocean, when increasingly long days and calmer waters turn the sea green with algal plant growth. Nearly half the annual nutritional requirements of the entire food web in this area are produced over the course of just a few ensuing weeks. The bloom starts in the protected waters of Prince William Sound and radiates out to the Gulf of Alaska, so the Sound acts as a magnet attracting fish, birds, and marine mammals hungry after the long winter. This magnet lured many of these animals to their deaths soon after the T/V *Exxon Valdez* hit Bligh Reef on March 24, 1989, just before the beginning of the spring bloom.

II. Lessons from the *Exxon Valdez* Oil Spill

The *Exxon Valdez* oil spill was caused by human error and occurred despite the assurances that the best available technology would make such events extremely unlikely and that new response methods would limit environmental damage should a spill occur. After hitting Bligh Reef just after midnight, the *Exxon Valdez* began discharging oil, creating an oil slick that expanded at a rate of nearly half a football field per second, and it continued expanding at this rate for two and a half days. By the time it was daylight a few hours later, containment was probably not feasible even in optimal circumstances and no matter how well prepared the responders were. Once a winter storm developed three days later, any remaining hope of containment was lost.

Nearly 11 million gallons of oil spilled from the *Exxon Valdez*. Despite heroic efforts involving more than 11,000 people, 2 billion dollars, and aggressive application of the most advanced technology available, only about 8% of the oil was ever recovered. This recovery rate is fairly typical rate for a large oil spill. About 20% evaporated, 50% contaminated beaches, and the rest

floated out to the North Pacific Ocean, where it formed tarballs that eventually stranded elsewhere or sank to the seafloor.

The spilled oil had devastating effects on the area. Thousands of marine mammals, hundreds of thousands of seabirds, and millions of fish were killed by encounters with spilled oil. Beaches were oiled along 1,200 miles of the coast, killing untold numbers of intertidal plants and animals, with additional losses caused by aggressive chemical and physical attempts to clean the shorelines. Together, the oil, chemicals, and other clean up methods caused habitat alteration that will persist for a century or more. Oil penetrated into some beaches, creating toxic reservoirs that are still there today and are likely to remain for decades more. These toxic oil reservoirs guaranteed unforeseen impacts that continued for well over a decade after the incident.

Long-term monitoring led to numerous insights regarding the ways that oil pollution impacts ecosystems. Field observations led to our discovery that the toxic components of oil are deleterious to embryonic development of salmon at concentrations in the parts per billion, over 100-fold lower than had previously been considered dangerous. This finding suggests that oil pollution from non-point sources everywhere could pose a much greater threat to fish habitat than previously recognized. Furthermore, the initial mass mortalities of wildlife that died from contact with oil had destabilizing effects on ecosystem function. For example, prey populations exploded following removal of their predators and rockweed removal in the intertidal areas deprived animals of the protective cover needed to avoid dehydration or predation. It took more than a decade for some areas to recover from these destabilizing effects, and recovery is still in progress in some of the hardest hit places. Another long-term impact came from pockets of oil beneath some beaches that were surprisingly resistant to natural degradation. These pockets retained most of their toxic components for more than a decade, occasionally re-contaminating sea otters and sea ducks that forage in the intertidal areas in search of clams, worms and other prey found there. This chronic re-exposure is likely a substantial if not primary reason why populations of sea otters and birds in the areas hardest hit by oil are only now recovering.

The persistence of oil had serious impacts on the most important predator of all—humans. Despite millions of dollars spent on analyses which demonstrated the absence of oil contaminants in subsistence food items, Alaska Natives in the region would occasionally dig up oil unexpectedly instead of clams. For this good reason, many Native Alaskans had legitimate questions about the accuracy of the chemical analyses, which led many to forswear subsistence foraging, with devastating consequences for their culture. During the process of collecting, preparing, sharing, and consuming food collected from nature, much of the culture of these peoples is transmitted from one generation to the next, binding the generations together. Hence, severing the link with subsistence, in a very real sense, severs the link between generations, often with tragic results. Because it arises from the perception that their environment has been irreversibly fouled and violated, augmented by suspicion regarding any attempts by outsiders to demonstrate otherwise, this consequence cannot be remedied monetarily. Once lost, it is nearly impossible to re-establish the reverence the younger generation held for their elders, whose knowledge, skills, and abilities are no longer seen as relevant. With their trust in the wholesomeness of the subsistence way of life compromised, many turn to western culture for their future.

The *Exxon Valdez* oil spill took a considerable toll on western commercial enterprises in the region as well. Direct economic losses were likely in excess of \$300 million, mostly because of fishery closures to avoid gear contamination by floating oil during the year immediately following the spill, followed by impacts on recreational fishing and tourism. These losses directly affected some 32,000 people whose livelihoods depended at least in part on ecosystem services provided by the region prior to the spill. In addition, the interruption in supply led to permanent loss of market share for pink salmon, the most lucrative fishery in the region. Combined with subsequent population crashes of pink salmon and herring from disease outbreaks and other factors that may have been caused at least in part by the spill, most of these once thriving businesses have never recovered. Using contingent valuation to evaluate costs to Americans who care about wild, productive, and unspoiled places like Prince William Sound even if they do not ever visit them resulted in another \$1 billion loss estimated from the spill.

The *Exxon Valdez* oil spill did lead to welcome, if belated, improvements in tanker safety in Prince William Sound. As a result of the Oil Pollution Act of 1990, and despite recalcitrance from ExxonMobil Corporation, double-hulled tankers are being phased in. The U.S. Coast Guard has implemented substantial improvements in ice detection and tanker guidance systems. Tankers are accompanied by dual tugs, one of which is towed stern-to-stern by exiting tankers to act as a forceful brake if needed, and the state of oil spill response capability now far exceeds that available prior to the *Exxon Valdez* spill. While these measures undoubtedly reduce the chances of another horrific oil spill, they do not eliminate it, at least in part because each of these systems is still vulnerable to the same sorts of human error that caused the *Exxon Valdez* spill.

The last lesson from the *Exxon Valdez* oil spill concerns hubris. Large marine oil development proposals are invariably presented as engineering challenges, often with scant regard for the complexity of the environment in which they would occur. Oil spill contingency plans are presented as exercises in damage control, under the implicit assumption that the important variables and their interactions are adequately understood, predictable, and manageable. Yet each spill is unique, the environment is extremely complex, and we do not yet understand how these systems interact with and respond to oil. A crucial reason for which the long-term impacts of the *Exxon Valdez* spill have been viewed as so surprising derives from the simple fact that enormous resources were available to evaluate them in comparison with any other spill before or since. In truth, our knowledge of how oil behaves in the environment and how it affects organisms is still in its infancy, especially in the more remote regions of our planet. Hence, any claim that we adequately understand and can foresee how oil pollution will affect even more challenging environments such as the Arctic continental shelf deserves skepticism.

It is clear that oil spills will continue to happen. We need only look to recent news stories to confirm this. The continued use and production of oil has led to spills already this year, in spite of the improvements described above, and there is no reason to think spills will not continue. In addition to the direct effects of spills, offshore drilling results in considerable releases of oil and other hazardous contaminants that threaten marine life. Furthermore, our use of oil makes a substantial contribution to the impacts of climate change, which is acidifying our oceans. For this reason alone, we should be moving away from oil development, not expanding it. Accordingly, Oceana believes we need to limit offshore drilling by reinstating and extending the pre-existing moratoria on offshore drilling. Furthermore, it is imperative that we take action in

the Arctic, where oil and gas activities already have begun. The *Exxon Valdez* experience suggests that the Arctic is at particularly great risk, as described below.

III. Lessons Applied to Offshore Oil Development in the Arctic

The most important lesson we can learn from the *Exxon Valdez* spill is to take every possible precaution to ensure that nothing like it ever happens again. Nonetheless, over the past several years, decisions have been made to open vast new areas of our coastline to offshore oil leasing, exploration, and development. The risks from these activities are particularly acute in the Arctic, where the oceans play a critical role in the culture of Native peoples, there is little available response, rescue, or clean-up capability, and little information about the environment or impacts from oil development is available.

The Beaufort and Chukchi Seas

The Arctic is at once one of the most beautiful and forbidding places on Earth and a critical component of the planet's ability to sustain life. In the Arctic, life swings between twenty-four hour days of sunshine in the summer and the long, cold, and dark winter. Despite those harsh conditions, the Arctic is home to vibrant communities and functioning ecosystems. The Beaufort and Chukchi seas are central to the very existence of Native communities, provide important habitat for countless species of wildlife, and play a vital role in regulating the world's climate.

Tens of thousands of people inhabit the Arctic region of the United States, which is entirely in Alaska. The majority of these residents consider themselves to be Alaska Natives and, though organized into towns and villages like elsewhere in the country, lead a much different life. For many Arctic residents, culture is dependent on subsistence harvesting, sharing of food, travel on snow and ice, traditional knowledge, and adaptation to Arctic conditions. Subsistence harvest of marine and terrestrial mammals, fish, and other resources provides more than just highly nutritious food. Just as with Alaska Natives in Prince William Sound, those activities also ensure cultural continuity and vibrancy by providing spiritual and cultural affirmation, and they are crucial for passing skills, knowledge, and values from one generation to the next.

For coastal villages, the Arctic seas are the centerpiece of life. Coastal people depend on marine plants and animals for food, clothing, and other necessities. For those villages that hunt bowhead whales, that hunt is at the heart of their existence. As stated by Edward Hopson:

For the coastal Inupiat Eskimo, the hunting of the bowhead whale [agviq] is the heart of our culture. It is the preparation for the hunt, the hunting, and the sharing of the successful hunt that are important. They must all be considered together. The successful hunt feeds us. The successful hunt affirms our shared values and traditions. The successful hunt gives us reason to celebrate together our spirit and sense of identity.

While relatively few whales are taken each year and the hunt is carefully regulated, the importance of the bowhead to coastal Arctic communities cannot be overstated. It is their existence as adapted across generations to the weather, isolation, and rhythms in the Arctic.

In addition to the vibrant communities that have adapted to the top of the world, the Arctic also supports some of the last remaining relatively pristine terrestrial and marine ecosystems. The Arctic is home to populations of some of the world's most iconic wildlife species. Bears, caribou, wolves, foxes, and others patrol the land while the Arctic seas are home to 23 species of marine mammals, including polar bears; bowhead, beluga, and gray whales; narwhal; walrus; and bearded, ringed, and ribbon seals. A diversity of fish and invertebrates can be found in the Arctic as well, including forage species like krill, Arctic cod, and capelin, which are vital to the marine food web. The Arctic nurtures some of the largest seabird populations in the world, and more than 280 species breed there. Several Arctic areas are critical to the birds' survival and have been designated by the National Audubon Society as Important Bird Areas.

These species come to the Arctic seas because they are among the biological crown jewels of the world's oceans. They are especially productive because oxygen concentrations are twice those of tropical waters and strong currents often drive upwelling that supplies nutrients to plants at the base of the food chain, and the productivity of these plants is more sensitive to light than to heat in comparison with their terrestrial counterparts. All these favorable factors are abundant in the Bering Sea, the southern Chukchi Sea, and to a lesser extent the western Beaufort Sea. The annualized rate of plant growth for phytoplankton, the microscopic algae that support the rest of the offshore marine food web, in the southern Chukchi Sea is among the highest in the world. These factors combine to make Bering Sea fisheries the most productive in the United States, as well as making the Bering Sea a biological oasis for a considerable proportion of the world's migratory birds and marine mammals. The southern Chukchi Sea is a biological stronghold for a comparably rich food web supporting Arctic cod, seals, walrus, polar bears, and humans.

These areas also play an important role in regulating our climate. The long periods of little to no sunlight and the high reflectivity of snow and ice when sunlight is present result in a net loss of heat. These factors help drive the circulation of the Earth's atmosphere and ocean currents which transport heat from the tropics to the poles where it is released from the planet. Thus, the health of the Arctic is important to the Earth's atmospheric and oceanic circulation patterns, which affects climate, weather, and natural systems worldwide.

The Changing Arctic

The remoteness and unforgiving climate of the Arctic have provided some protection from the extraordinary human expansion of the last 200 years. Until recently the Beaufort and Chukchi seas were covered in sea ice for much of the year. Now, however, the region is changing. The dramatic reduction in Arctic sea ice over the last few years opens the Arctic Ocean to the possibility of unprecedented industrialization. The expansion of high-risk activities such as oil and gas exploration and development, large-scale commercial fishing, and shipping would add additional pressures to the already-stressed communities, animals, and ecosystems of the far north.

The Arctic is at the forefront of global climate change. It is warming at twice the rate of the rest of the planet, and that warming is causing unprecedented losses of Arctic sea ice. In 2007, the seasonal minimum sea ice extent reached a record low—23% lower than it had been since 1979 when satellite measurements began. In 2008, the minimum sea ice extent was lower than any year but 2007. In addition, ice cover was more diffuse and the ice pack was thinner, suggesting that 2008 may have established a record low ice volume. The rate at which sea ice cover is declining exceeds even the most sensational predictions from just a few years ago, and scientists now predict the Arctic could be seasonally ice-free by 2030.

This loss of sea ice dramatically alters the ways in which these ecosystems function and places them under profound stress. This stress is apparent in changes in the location of phytoplankton growth from the edge of the ice pack to the open water column, a likely increase of productivity in the more open water parts of the Beaufort and Chukchi seas, a general northward displacement of marine life to production regimes for which they are not entirely adapted, and the displacement of habitat for ice-dependent marine mammals from the most productive parts of the seafloor on which they depend to provide for their young.

These stresses are compounded by a companion threat from ocean acidification. Rising levels of carbon dioxide in the atmosphere, which are attributable to fossil fuel combustion by humans, have increased the rate at which carbon dioxide dissolves into the surface of the ocean. Once dissolved, carbon dioxide reacts with water to form carbonic acid, making the ocean waters more acidic. The resulting acidity can attack the calcium carbonate that hardens the exoskeletons of a wide array of organisms ranging from some phytoplankton species to tube worms, clams, crabs, snails, corals, and many others. The Arctic is the most vulnerable ocean in the world to this acidification process. It is so vulnerable because carbon dioxide, like oxygen, is more soluble in cold water, and because the ability of surface seawater to neutralize the resulting carbonic acid is diluted by the large freshwater discharges of the Mackenzie and Yukon rivers in North America and similarly large rivers in Eurasia.

IV. Impacts of Offshore Oil, Leasing, Exploration, and Development in the Alaskan Arctic

At the same time these sensitive ecosystems are changing, large swaths of the Beaufort and Chukchi seas and Bristol Bay are being made available for oil and gas leasing. For much of the past several decades, efforts to expand oil production in Alaska have focused on terrestrial areas, and there was little attention paid to the Arctic Ocean. That has changed dramatically. Prior to 2008, no leases were owned in the Chukchi Sea. That year, the Minerals Management Service (MMS) held the first lease sale in that area since 1991. It offered more than 34 million acres of the outer continental shelf, and sold leases encompassing nearly 3 million acres. Under the current 2007-12 Five-Year Planning Program, MMS plans to hold two additional lease sales in this area in which approximately 37 million acres would be offered to oil companies.

Similarly, MMS is moving forward aggressively with leasing in the Beaufort Sea. Between 2003 and 2007, three lease sales were held in the Beaufort Sea. In those sales, oil companies purchased rights to leases encompassing more than one million acres. Under the current 2007-12 Five-Year Planning Program, MMS plans to hold two additional lease sales in this area in which

roughly 32 million acres would be offered to oil companies. The 2007-12 Five-Year Planning Program also includes a proposed sale encompassing 5.6 million acres in the sensitive Bristol Bay area and a “special interest sale” option for a sale in Cook Inlet.

Much of what we have learned over the past twenty years from the *Exxon Valdez* oil spill applies directly to the leasing, exploration, and development in the Arctic. Given the remoteness and sensitivity of those marine systems, however, those threats may be magnified. We know relatively little about how these ecosystems function, especially north of the Bering Sea. While the Bering Sea has received increasing scientific attention over the last few decades, we still know almost nothing about processes that occur during winter, the critical season when death is most likely and hence when year class survival is most likely to be set. This dearth of knowledge is much worse north of the Bering Sea, where perennial Arctic sea ice has until recently limited our ability to even find out what organisms live there. The lack of scientific knowledge makes the impacts of oil and gas activities extremely difficult to predict, particularly in light of the rapid changes occurring there.

The most dramatic risk, of course, is another catastrophic spill, and MMS estimates that at least one major spill is more likely than not over economic lifetimes of oil reserves in the Beaufort and Chukchi seas. In the environmental impact statement for the 2007-12 Five-Year Leasing Program, MMS estimates that there will be one large spill in either the Beaufort or Chukchi seas. In its 2008 Draft Environmental Impact Statement for the Chukchi and Beaufort Planning Areas produced, MMS estimates that there is a 40% chance of a large spill in the Chukchi Sea and a 26% chance of a large spill in the Beaufort Sea. These percentages may understate the risk because the final technology that would be deployed for oil extraction is not clear, and it is difficult to realistically account for human error.

Given the dearth of experience with producing oil in waters exposed to seasonal pack ice and the acknowledged inability to respond to or clean up any oil releases in the presence of ice, the stage is being set for impacts that could substantially exceed those of the *Exxon Valdez* oil spill. Once again, Alaska Natives, whose continuous inhabitation of this region is longer by far than any other human settlement in North America, and who depend on the ocean for food and culture, stand to lose the most in the event of a major spill.

In addition to a catastrophic spill, oil leasing, exploration, and development bring other threats to the Arctic. Offshore activities necessitate networks of pipelines needed to collect and transport the oil from the fields to the shore from as much as 50 miles away, new storage and port facilities along the coast, airstrips, marine vessel as well as aircraft and helicopter traffic. Together, these industrial facilities would cause: noise pollution from seismic testing, increased vessel traffic, and oil platform operations; increased likelihood of vessel strikes to marine mammals; transport of invasive species in ballast water or on the external surfaces of vessels and drilling rigs; and increased risk of pollution from oil and other contaminants associated with exploration and production. Many of these activities are occurring already. Seismic studies have been conducted in the Beaufort and Chukchi seas, and there are proposals to drill exploratory wells.

Oil production in the Arctic would also increase air pollution and contribute to global warming by producing soot. Soot consists of black carbon particles formed by the incomplete combustion

of fuels, including flares that may be used to dispose of excess natural gas produced by oil wells. These black carbon particles contribute to a positive feedback loop that could accelerate warming in the Arctic. The soot may eventually settle on ice and snow, where it can dramatically accelerate melting during spring and summer, transforming surfaces that reflect sunlight back into the atmosphere into liquid water, which efficiently absorbs sunlight. The absorbed sunlight warms the water, which warms the surrounding region, causing faster permafrost melting and releasing stored greenhouse gases, such as carbon dioxide and methane, into the atmosphere. The release of these greenhouse gases, in turn, causes more snow and ice to melt, which causes more warming, and so on. This positive feedback loop is amplified by the warming effect of the black carbon particles, which can accelerate the rate of warming across the whole planet. This increased warming, which disproportionately affects the Arctic, would place the marine ecosystems under commensurately increased stress.

While we know these ecosystems face large and rapid stress, our ability to measure these impacts is severely limited by the logistical challenges of sampling in this region and the paltry baseline data available. In such a situation, it is prudent to proceed cautiously and avoid adding additional stress to the system unless absolutely necessary. The current and proposed leasing in the Arctic do not meet either of these criteria. As discussed above, these activities will dramatically increase the stress on the region. In addition, reserves in the Beaufort and Chukchi lease areas would supply only a small fraction of the U.S. energy needs. Thus, their necessity is questionable, and these activities should not be considered in the absence of a comprehensive plan to move toward renewable energy and sustainable living.

V. Science-Based, Precautionary Management

On the 20th anniversary of the *Exxon Valdez* spill, we stand at a crossroads in the way the United States approaches energy and our oceans. As detailed above, we have learned much about the effects of oil in our oceans and the risks from offshore activities. At the same time, we know that we have a relatively poor understanding of the functioning of Arctic ecosystems and that we cannot effectively respond to or clean up an oil spill in the Arctic. While twenty years ago we might have pleaded ignorance, there is no excuse now for failing to address the risks and unknowns as we make decisions about our oceans.

For those reasons, we must stop the ongoing and planned leasing, seismic, and other activities in the Beaufort and Chukchi seas and Bristol Bay. Instead of rushing ahead in the absence of science and thorough planning, the federal government should develop a comprehensive Arctic conservation and energy plan based on a full scientific assessment of the health, biodiversity, and functioning of Arctic ecosystems to guide decisions about whether, when, where, and how industrial activities are permitted. Creating a comprehensive plan would begin with a gap analysis and research plan developed by independent scientists, such as the National Research Council. Further, the plan could be created in conjunction with broader climate and energy plans for America.

Such an approach has been started with regard to commercial fishing in the Arctic. In February 2009, the North Pacific Fishery Management Council (NPFMC) adopted a fishery management

plan for the Beaufort and Chukchi seas. In recognition of the profound stresses on those ecosystems and our very limited knowledge of them, that plan precludes commercial fishing in U.S. Arctic waters until scientific evidence shows that such fishing can be conducted without harming the ecosystem or opportunities for the subsistence way of life. The plan was adopted unanimously and with support from scientists, industry, Native entities, and conservation groups. This “look before we leap” approach provides a model for addressing other proposed activities in the region.

Developing a comprehensive plan for the Arctic would involve coordinating expertise from a variety of sources including government agencies (such as NOAA, FWS, MMS, BLM, the Coast Guard, EPA), local governments, Native entities, scientists, and others. An interagency task force should be created to incorporate their expertise and actions related to the Arctic. This task force would oversee the creation and implementation of an Arctic conservation and energy plan and could be headed by a new position in CEQ or by the NOAA Administrator. As this process proceeds, local and traditional knowledge must play an important role.

Further, for any areas in which oil and gas activities are considered, we must ensure that they can be conducted without harming ecosystems or impacting the subsistence way of life. Doing so requires the best available technology and, at minimum:

- a. Clear evidence that accidents can be controlled, contained and cleaned up;
- b. Adequate response capabilities, including tugs, booms, equipment and trained on-site personnel;
- c. Zero discharge of produced waters, drilling muds, or other byproducts;
- d. Monitoring and tracking for all vessels and materials; and
- e. Processes and procedures to protect marine mammals and other resources from the effects of seismic activities, noise, and other pollution;

A comprehensive, science-based plan for managing ocean resources and appropriate standards for any activities permitted are only one part of the equation. At the same time, we must work to develop alternative sources of energy, such as wind, and, we must provide incentives to conserve.

I live in Juneau, Alaska, a town of 31,000 people that is run almost entirely on hydropower. Last April, an avalanche severed the transmission line from our power source, forcing us to immediately switch to diesel-generated electricity and increasing costs by 500% overnight. Within a week, we lowered our consumption of electricity by over 30%. We did mainly this by reducing needless waste. No businesses closed, no one froze and, while the stores ran out of compact fluorescent light bulbs, life went on pretty much as normal. Even after the transmission line was fixed, our consumption rate has remained about 10% below what it was.

Through simple conservation efforts, the United States could achieve similar savings. Even a 10% reduction of petroleum consumption would remove nearly 2 million barrels of oil per day from the oil market, which would lower the price of gas much more quickly than the decades required for new oil reserves to come on-line. Besides lowering the price of gas for everyone, this relatively small conservation effort would improve our balance of payments, reduce our

reliance on foreign sources of oil, and lower our emissions of carbon dioxide to the atmosphere. It would slow both global warming and ocean acidification, set a compelling example to the rest of the world, and preclude placing the last great biological strongholds in jeopardy from oil pollution. Were we to actually achieve a 30% reduction in fossil fuel use through conservation, the improvement in the atmosphere would be detectable within a year. Were we to augment the savings from conservation with a deliberate transition to alternative energy sources combined with more efficient ways of using energy, we could cut our carbon dioxide emissions in half much sooner than we currently think possible. Indeed, energy from offshore wind sources has the potential to replace fossil fuels for electrical power generation in much of the northeastern U.S. and southern California. We will still need fossil fuel generation if only for back-up supplies, but it does not have to be the dominant source of power generation. We must demonstrate the will and leadership to accomplish these goals. When I was young, we made a national commitment to go to the moon in ten years, and what we face today to change our power generation infrastructure is not nearly as technologically challenging.

VI. Conclusion

As I think back on the last twenty years, I am struck by cyclical nature of these events. Before the *Exxon Valdez* oil spill, we were told that oil development was safe and necessary. In the intervening decades, science has shown us that it is not. While we have made some progress in transport safety as well as response and rescue capability, we still cannot clean up a spill in Arctic waters, and we still do not understand those systems—let alone how they might be affected by industrial activities. Nonetheless, oil companies and others would have us believe that, this time, it will be fine. This time, we should be smart enough to recognize all that we don't know and all that we stand to lose.

For those reasons, we must stop all ongoing and planned activities offshore in Alaskan waters and begin the development of a science-based, precautionary conservation and energy plan for the Arctic that provides a bridge from oil to renewable energy and conservation. We also must reinstate and extend the moratoria on offshore drilling in U.S. waters. We owe it to ourselves and those who lives would be depend on preventing a repeat of the *Exxon Valdez* oil spill.

**Alaska Wilderness League • Center for Biological Diversity • Defenders of Wildlife •
Earthjustice • National Audubon Society • National Wildlife Federation • Natural
Resources Defense Council • Northern Alaska Environmental Center • Oceana •
Ocean Conservancy • Pacific Environment • Pew Environment Group •
Sierra Club • The Wilderness Society**

May 19, 2010

Honorable Ken Salazar
Secretary of the Interior
1849 C Street, N.W.
Washington, DC 20240

Dear Secretary Salazar:

On May 14, Shell Oil Company responded to the Minerals Management Service's (MMS) request for information about additional safety procedures Shell intends to put in place for its proposed Arctic Ocean drilling this summer in light of the *Deepwater Horizon* spill. There are many reasons that Shell's Arctic drilling plans should be put on hold, including lack of baseline science and response and rescue capabilities; this letter focuses only on the specific issues raised by Shell's response to MMS.

Shell falls far short of ensuring that drilling can be conducted safely in the Arctic Ocean this summer. It is in the best interest of the United States that the Department of the Interior (DOI) suspend exploration drilling in the Arctic Ocean this summer until, at a minimum, the causes of the Gulf BP blowout are fully understood, DOI can be confident that this type of incident will not happen in the Arctic Ocean, Shell has a demonstrated oil spill response capability for the Arctic Ocean, and the agency has conducted a thorough re-evaluation of its decision based on the new information.

Before allowing Shell to drill exploration wells in the frontier areas of the Chukchi and Beaufort seas, DOI has a responsibility to document and analyze fully the failures of MMS and industry that led to the ongoing spill in the Gulf of Mexico. DOI must identify the root causes of the BP blowout and spill—including lax government oversight and operator failures—and take action to address those causes. And DOI must analyze and understand the risks and benefits of response efforts, some of which Shell suggests it would employ in case of a spill. These essential actions cannot be completed in the six weeks remaining before Shell's proposed drilling would commence.

The oil spill response and safety measures that Shell outlines in its letter remain inadequate. Shell's letter offers little new information about its spill prevention and response plans. Instead, the letter primarily attempts to justify the adequacy of Shell's original, pre-*Deepwater Horizon* spill prevention and response plans. The few additional measures the letter does introduce are not explained or justified, and they raise more questions than they answer.

SHELL'S EXISTING EXPLORATION AND OIL SPILL PREVENTION AND RESPONSE PLANS ARE FLAWED

A. *Shell fails to acknowledge that there are no proven means of effectively cleaning up spilled oil in the Arctic Ocean's icy waters.*

It is widely accepted that, even in optimal conditions, recovery rates of spilled oil rarely exceed 20 percent.¹ As we are witnessing daily, even under the relatively temperate conditions present in the Gulf of Mexico, efforts to contain and clean up the BP spill have been plagued by failures and setbacks. Shell's letter acknowledges that there are important differences between cleaning up an oil spill in Arctic conditions and cleaning up a spill in temperate Gulf conditions. Shell asserts, however, that Arctic conditions such as ice actually enhance its ability to clean up spilled oil. This assertion directly contradicts what most experts have to say about cleaning up oil in the Arctic's icy waters.

Coast Guard Commandant Admiral Thad Allen, who is leading the joint response efforts in the Gulf of Mexico, has cautioned "that oil spill clean-up is significantly more difficult in colder temperatures and ice-covered waters," because of "a harsh environment and limited response resources and capabilities"² The U.S. Arctic Research Commission recently reiterated these concerns:

The Arctic is a venue with particular need for oil spill prevention and response. Unique risks in the North include protracted darkness, cold, ice cover, and powerful storms, all of which complicate prevention and response efforts for spills in ice-covered waters. Good scientific baseline information is lacking for living resources in the much of the region and the need exists to better understand

¹ See Letter from Dr. Jane Lubchenco, Undersecretary of Commerce for Oceans and Atmosphere, to Ms. S. Elizabeth Birnbaum, Director, Minerals Management Service (Sept. 21, 2009) at 6; International Tanker Owners Pollution Federation, Limitations of Containment and Recovery at 1, *available at* <http://www.itopf.com/spill-response/clean-up-and-response/containment-and-recovery/> ("containment and recovery at sea rarely results in the removal of more than a relatively small proportion of a large [oil] spill, at best only 10 - 15% and often considerably less").

² S. Hrg. 111-259, Strategic Importance of the Arctic in U.S. Policy, 111th Cong. S. Hrg. 111-259 at 17-18 (Aug. 20, 2009) (written testimony of U.S. Coast Guard Commandant, Admiral Thad W. Allen, *available at* http://www.voltairenet.org/IMG/pdf/Strategic_Importance_of_the_Arctic.pdf).

both basic biological features, as well as the spatial habitat of flora and fauna that might be at risk from spills.³

A 2009 joint report by the National Oceanic and Atmospheric Administration and the University of New Hampshire concluded that more needs to be done to enhance emergency response capacity in the Arctic.⁴ The 2009 Arctic Marine Shipping Assessment states that “[t]he current lack of marine infrastructure in all but a limited number of areas coupled with the vastness and harshness of the environment, make conduct of emergency response significantly more difficult in the Arctic.”⁵ Similarly, the Arctic Council has noted that “[d]uring much of the year and under many conditions, response capabilities and methods are limited by environmental conditions, lack of resources capable of responding in a timely manner, and limited technologies for responding to oil spills in ice conditions.”⁶

MMS itself acknowledges major oil spill response gaps in the Arctic Ocean. It states that, “[f]ield deployment tests of booms and skimmers in broken ice conditions in the Alaskan Beaufort Sea highlighted the severe limitations of conventional equipment *in even trace concentrations* of broken ice.”⁷ According to the agency, a “critical gap in spill response is the lack of capability to accurately measure and map the thickness of oil on water and to rapidly

³ White Paper, U.S. Arctic Research Commission Recommends Steps to Expanded U.S. Funding for Arctic/Subarctic Oil Spill Research February 24, 2010 – DRAFT at 1, *available at* http://www.arctic.gov/publications/usarc_oilspill_2-24-10.pdf.

⁴ Coastal Response Research Center (2009), *Opening the Arctic Seas: Envisioning Disaster & Framing Solutions*, University of New Hampshire, Durham, N.H., *available at* http://www.crrc.unh.edu/workshops/arctic_spill_summit/arctic_summit_report_final.pdf.

⁵ Arctic Council, *Arctic Marine Shipping Assessment* (2009), *available at* <http://arctic-council.org/filearchive/amsa2009report.pdf>.

⁶ Arctic Council, *Arctic Offshore Oil and Gas Guidelines* (2009) at 8, *available at* <http://arctic-council.org/filearchive/Arctic%20Offshore%20Oil%20and%20Gas%20Guidelines%202009.pdf>.

⁷ Arctic Oil Spill Response Research and Development Program: A Decade of Achievement, U.S. Department of the Interior Minerals Management Service (MMS Decade of Achievement) at 24, *available at* <http://www.mms.gov/tarprojectcategories/PDFs/MMSArcticResearch.pdf>; *see also Advancing Oil Spill Response in Ice-Covered Waters*, DF Dickson Associates Ltd. for Prince William Sound Oil Spill Recovery Institute (OSRI) and the United States Arctic Research Commission (USARC) (March 2004) (*Advancing Oil Spill Response*) at iv, *available at* http://www.arctic.gov/publications/oil_in_ice.pdf (“Mechanical recovery of oil spills in pack ice is limited by drifting ice interrupting conventional containment and skimming activities.”). For an assessment of the MMS Decade of Achievement report and description of the remaining challenges of oil spill cleanup in the Arctic Ocean, see World Wildlife Fund, *Not So Fast: Some Progress in Spill Response, but US Still Ill-Prepared for Arctic Offshore Development*, *available at* <http://www.worldwildlife.org/what/wherewework/arctic/WWFBinaryitem14712.pdf>.

send this information to response personnel in the command post.”⁸ Another limitation is “[t]he present inability to reliably detect and map oil trapped in, under, on, or among ice” which “is a critical deficiency, affecting all aspects of response to spills in ice.”⁹ MMS also has concluded generally that “[o]ne fundamental problem with the application of in situ burning to oil well blowouts or subsea oil pipeline leaks is that the slicks are initially too thin, or they can thin quickly, preventing effective ignition and burning.”¹⁰

Shell does not address these widespread limitations in its letter and Shell’s plan relies on some of the same equipment found to be inadequate in the Beaufort field tests. Moreover, Shell has never conducted an offshore oil spill response drill in the Chukchi Sea to test its equipment and assumptions. The letter’s only justification for Shell’s assertion that ice facilitates oil spill clean-up is a recent ice-field test in the Barents Sea, conducted in limited, controlled conditions with only small amounts of oil.

Shell’s complete failure to address the limitations of spill response techniques in Arctic Ocean conditions clearly violates MMS regulations requiring operators to discuss their ability to respond in adverse weather conditions, including when sea-ice is present. *See* 30 C.F.R. § 254.6; *id.* § 254.26(d), (e)(1).

B. Shell fails to address the difficulties of mounting a large-scale, rapid oil spill response in the context of the Arctic’s limited infrastructure.

The Gulf of Mexico constitutes this country’s most well-developed offshore drilling region. As of May 19, the response to the Gulf blowout had included approximately 20,000 personnel, 970 vessels, 1.9 million feet of containment and sorbent boom, and 600,000 gallons of dispersants.¹¹ Equipment, personnel, boats and aircraft have been flooding into the Gulf region since the spill began. Despite these resources, however, the spill continues largely unabated, with response teams able to clean up only a small fraction of the spilled oil.

The Arctic Ocean where Shell proposes to drill in several weeks is extremely remote. There is no road system in this part of Alaska. Equipment or personnel that arrive on cargo planes will need to be transported to the spill site by barge or helicopter, and such transport is limited by weather conditions. The nearest airports to Shell’s Chukchi Sea drill sites that can handle a C-130 cargo plane are Barrow (100 miles away) and Point Hope (150 miles away). Barrow’s airstrip is 2,000 linear miles from Seattle, 2,900 miles from Los Angeles, 3,400 from New Jersey and 3,600 miles from Houston. The flight time from any of the major U.S.

⁸ MMS Decade of Achievement at 12.

⁹ Advancing Oil Spill Response at iv.

¹⁰ MMS Decade of Achievement at 24.

¹¹ *Deepwater Horizon* Response: Current Operations and Ongoing Response, available at <http://www.deepwaterhorizonresponse.com/go/doc/2931/543103/>.

equipment caches (Seattle, Los Angeles, New Jersey, Houston) to Barrow could be 12 hours or more. The nearest Coast Guard Station is in Kodiak, Alaska over 1,000 miles away.

Shell does not address these procurement, logistical, and deployment challenges in its letter or its spill response plans, in violation of regulations implementing the Oil Pollution Act of 1990. *See* 30 C.F.R. § 254.23 (operator must describe emergency response action plan procedures it expects to follow in the event of a spill or a substantial threat of a spill); *id.* § 254.24 (requiring inventory of spill-response materials, supplies, services, equipment, and response vessels available locally and regionally). A major spill would require Shell to bring in trained personnel, boats, boom, skimmers, aircraft and dispersants from all over the country. *See* 30 C.F.R. § 254.23(g)(5) (requiring plans for “ensur[ing] that containment and recovery equipment as well as response personnel are mobilized and deployed at the spill site”); *see also* 30 C.F.R. § 254.26(d)(4) (requiring individual deployment times for equipment and personnel procurement and deployment). But Shell does not specify when, where, or how these resources would be transported to a remote Arctic Ocean spill site. Shell never explains basic concerns regarding mobilizing resources and people to such a remote location. For example, there are no hotels that could handle such an influx of people. Large berthing ships or cruise ships would likely be needed to house cleanup workers. In plans submitted to MMS, Shell has demonstrated contractual access to only a few hundred trained workers. And Wainwright, the nearest village to Shell’s drill sites in the Chukchi, does not even have a boat dock—only a boat ramp. More generally, Shell does not say what it will do while it waits for the aircraft, barges, or other storage vessels to arrive at the spill site. *See* 30 C.F.R. § 254.23(g)(6) (requiring assurance that “devices for the storage of recovered oil are sufficient to allow containment and recovery operations to continue without interruption”).

C. Shell ignores MMS data showing that the risk of a blowout is greater in shallow water than in deep water.

Shell attempts to distinguish its proposed Arctic Ocean drilling from the *Deepwater Horizon* by arguing that there are differences in water depth and pressure between the Gulf of Mexico and this summer’s Arctic drill sites. Shell fails to address data indicating that blowouts are more common in shallow water than deep water. As MMS’s career-long employee, Elmer P. Danenberger, recently testified before the Senate Committee on Energy and Natural Resources, MMS data collected over a 15-year period, demonstrate that “well control performance for deepwater drilling was significantly better than for shallow water operations.”¹² An MMS report synthesizing that data concludes that between 1992 and 2006 “most blowouts occurred during the drilling of wells in water depths of less than 500 [feet].” It also concluded that 19 of the 39

¹² Written Statement of Elmer P. Danenberger III, Senate Committee on Energy and Natural Resources (May 11, 2010) at 2, *available at* <http://www.scribd.com/doc/31169012/Danenberger-Testimony-05-11-10>.

blowouts in this time frame occurred in water depths of zero to 200 feet.¹³ Blowouts can happen and blowout preventers can malfunction—regardless of depth.

Shell’s argument also ignores the fact that MMS requires blowout preventers (BOP) to be designed and installed to handle the highest surface pressure expected at a particular well. 30 C.F.R. § 250.440. Therefore, any difference in pressure between Shell’s Arctic drill sites and BP’s Gulf of Mexico sites is not a major factor in the risks associated with a particular drill site; each respective BOP must match the specific well pressure plus a safety factor. Regardless of the pressure, the BOP either works or it fails. If the BOP malfunctions, the consequence of an uncontrolled blowout is the same.

In addition, with respect to the Chukchi Sea, at least, MMS’s statements at the time it was reviewing Shell’s drilling plan call into question Shell’s assertions about well pressure. In November 2009, MMS agency personnel acknowledged that the agency did not have “any flow data from any well tests for the Chukchi basin,” and thus resorted to using the Alaska state standard flow rate of 5,500 barrels of oil per day for blowout response planning purposes.¹⁴

THE NEW INFORMATION PROVIDED IN SHELL’S LETTER IS INADEQUATE AND RAISES MORE QUESTIONS THAN IT ANSWERS

A. *Shell has failed to demonstrate it has an adequate plan to drill a relief well.*

The May 14 letter continues to assert that Shell’s primary vessel for drilling a relief well in the event of a blowout will be the *Frontier Discoverer*. As recent experience in the Gulf of Mexico and Australia demonstrates, however, blowouts can damage and sink drill rigs. Shell does not explain why it is reasonable to assume the *Discoverer* will be unharmed and be able to move off the drill-site and drill a relief well in the event of an emergency. In addition, Shell fails to address how it would handle a late-season spill, when ice conditions could prevent it altogether from drilling a relief well.

Shell also states that it will use another drillship, the *Kulluk*, to drill a relief well if it cannot use the *Discoverer*. But Shell’s letter does not provide any details about this eleventh-hour addition.

¹³ Absence of Fatalities in Blowouts Encouraging in MMS Study of OCS Incidents 1992-2006, David Izon, E.P. Danenberger, Melinda Mayes, Minerals Management Service, Drilling Contractor, (July/August 2007) at 84, *available at* http://drillingcontractor.org/dcpi/dc-julyaug07/DC_July07_MMSBlowouts.pdf.

¹⁴ Email from Jeffrey Walker, Minerals Management Service, to, Douglas Choromanski, Minerals Management Service, Re: Chukchi Sea Worst Case Discharge (Nov. 9, 2009).

As an initial matter, the addition of the *Kulluk* is inconsistent with an MMS-funded study that concluded “[i]t is apparent from statistical wind/wave data that the Chukchi Sea has more extreme wave conditions, potentially making a ‘*Kulluk*-like’ drilling unit *unsuitable* for this area.”¹⁵ Indeed, Shell’s letter raises concerns whether the *Kulluk* is even operational, stating only that Shell has “made significant capital improvements” and is “managing rig readiness” of the ship. There is no information about whether and when the *Kulluk* could be ready to drill a relief well.

Shell’s continuing failure to explain how it will ensure an adequate response in the event of a blowout violates Outer Continental Shelf Lands Act and Oil Pollution Act regulations. *See, e.g.*, 30 C.F.R. § 250.213(g) (requiring a blowout description that discusses “the availability of a rig to drill a relief well, and rig package constraints”); 30 C.F.R. § 254.26 (requiring detailed discussion of Shell’s worst case discharge scenario, including response in “adverse weather conditions” and “description of the response equipment that you will use” that must include “the types, location(s) and owner, quantity, and capabilities of the equipment”).

B. Shell’s proposed underwater use of dispersants in the event of an oil spill is untested, potentially lethal to the benthic-driven Arctic Ocean ecosystem, and possibly ineffective.

Shell states that it would expand the use of dispersants in the Arctic Ocean to combat an oil spill this summer by “apply[ing] dispersant under water at the sources of any oil that might occur”¹⁶ However, Shell has not provided adequate analysis of the effectiveness of such a response or explained how an experimental and emergency procedure now being attempted in the Gulf of Mexico is an appropriate response measure for Arctic conditions. It is one thing for the government to make a difficult choice to use untested technology in the context of a catastrophe like the ongoing BP spill; it is another to accept Shell’s proposed undersea use of dispersants when there is ample time to consider likely impacts of such use before it occurs.

Even with respect to surface applications of dispersants, Shell fails to provide an adequate level of detail in its spill response plans. In the Chukchi Sea, Shell provided approximately two pages describing the company’s use of dispersants,¹⁷ and in the Beaufort Sea,

¹⁵ Michael J. Paulin, *Arctic Offshore Technology Assessment of Exploration and Production Options for Cold Regions of the US Outer Continental Shelf* (2008) at 240, available at http://www.mms.gov/tarprojects/584/FINAL_REPORT.pdf (emphasis added).

¹⁶ Shell Letter at 5.

¹⁷ Shell Gulf of Mexico, Inc., *Chukchi Sea Regional Exploration Oil Discharge Prevention and Contingency Plan, Revision 0* (May 2009) at Sec. 1.7 (pp. 1-90-2), available at http://www.mms.gov/alaska/ref/ProjectHistory/2009_Chukchi_Shell/2009_0623_Shell_cplan.pdf.

Shell provided no information whatsoever regarding the company's dispersant plan.¹⁸ By contrast, BP provided MMS a Dispersant Use Plan totaling more than 40 pages for its Gulf of Mexico drilling, explaining what dispersants the company would use, under what circumstances, and how the company would apply the chemicals.¹⁹ Shell's cursory description of dispersant use clearly violates MMS regulations requiring a full description of a dispersant use plan. *See* 30 C.F.R. § 254.27.

Shell's failure to fully analyze the use of dispersants is all the more troubling in light of MMS's acknowledgment that "[t]here are regional concerns that dispersants may not be effective on spills of Alaskan crude oils in cold water/broken ice, especially those that could take place in the colder months and that dispersants should not be or cannot be used in these conditions."²⁰ Other experts recognize that "[i]n cold-water environments where there is also ice, dispersants have been viewed as having the potential for only limited success. Concerns include the lack of natural mixing energy due to the dampening effects of the ice, and the tendency for oils to become viscous at low temperatures."²¹

The use of underwater dispersants raises a host of questions. These include the fundamental matter of effectiveness as well as potentially disastrous long-term ecological impacts that require a thorough analysis prior to approval as part of a response plan.

C. Shell proposes to fabricate and use a containment dome, but fails to provide information about why that dome would be more successful than the one that failed in the Gulf.

Shell proposes to add a containment dome to its Arctic Ocean drilling response equipment, but it has provided no details about the novel response idea. For example, Shell never explains the dome's specifications, testing results, location at the time of drilling, or deployment logistics. In addition, Shell offers no explanation for its assumption that the use of a coffer dam in the Arctic Ocean—with its storms and dynamic sea-ice conditions—would be more successful than it has been in the Gulf of Mexico.

The "siphon strategy" most recently deployed by BP in the Gulf of Mexico has been shown to be only capable of siphoning off a very small fraction of the on-going blowout, undermining the credibility of this approach as a meaningful response strategy. Whether it were

¹⁸ Shell Offshore, Inc., Beaufort Sea Regional Exploration Oil Discharge Prevention and Contingency Plan, Revision 1 (April 2009) at MMS-2 (describing plan as "not applicable"), *available at* http://www.mms.gov/alaska/ref/ProjectHistory/Shell_BF/2007_cplan.pdf.

¹⁹ BP Gulf of Mexico Regional Oil Spill Response Plan, Sec. 18 (http://www.mms.gov/DeepwaterHorizon/BP_Regional_OS RP_Redactedv2.pdf).

²⁰ MMS Decade of Achievement at 22.

²¹ Advancing Oil Spill Response at iii.

to involve a containment dome or other “siphon” mechanism, Shell fails to provide information as to how it would stage and manage the logistics of siphoning oil to a tanker at the surface of the ocean, how many ships would be required, what ice breaker support would be involved, what would be done to dispose of the recovered oil, or how such an operation could be sustained over any significant length of time which could extend into freeze up.

D. Shell proposes to make available a second BOP, but it fails to provide an adequate description of how the device would be used.

Shell now claims it will have an alternative BOP available for this summer’s Arctic drilling. Shell’s claim, however, provides MMS no information that would allow the agency to evaluate the risks or efficacy of this proposal. Essential questions remain unanswered: when and how will Shell use this BOP; what are the BOPs specifications; when was it tested; and how long will it take to mobilize to the drill sites? Shell’s suggestion that it might use an alternative BOP in some unidentified manner at some undefined moment in time raises more questions than it answers.

* * * * *

For all of the foregoing reasons, the undersigned groups hereby respectfully request that you immediately suspend Shell's drilling plans in the Arctic Ocean.

The tragic events unfolding in the Gulf of Mexico have focused the nation’s attention on the need to understand what led to the BP blowout and spill and to prevent it from happening again. These causes include not only the engineering problems of blowout preventers and potentially criminal behavior on the part of one or more corporations but also the systemic regulatory failures of MMS to provide needed environmental impact analysis, appropriate industry oversight, and meaningful enforcement.

President Obama has appropriately pledged to task a special commission to undertake a thorough investigation and analysis of the failures that resulted to the *Deepwater Horizon* disaster. Damage from the ongoing oil spill in the Gulf of Mexico may last for generations, and a quick 30-day review is clearly not sufficient to credibly address the many technical and regulatory concerns that have been brought to light by this spill.

It is imperative to allow sufficient time for the President’s commission and other investigative bodies to complete their investigations of the failures that led to the ongoing BP blowout and to apply the lessons learned from this disaster before proceeding with new drilling,

**Alaska Wilderness League • Center for Biological Diversity • Defenders of Wildlife •
Earthjustice • National Audubon Society • National Wildlife Federation • Natural
Resources Defense Council • Northern Alaska Environmental Center • Oceana •
Ocean Conservancy • Pacific Environment • Pew Environment Group •
Sierra Club • The Wilderness Society**

especially in frontier areas such as the Arctic Ocean where there is a profound lack of baseline science, an inadequate understanding of Arctic ecosystems, and a clear lack of spill response capability.

Sincerely,

Cindy Shogan
Executive Director
Alaska Wilderness League

Pamela A. Miller
Arctic Program Director
Northern Alaska Environmental Center

Rebecca Noblin
Alaska Director
Center for Biological Diversity

Jim Ayers
Vice President
Oceana

Bob Irvin
Senior Vice President
Defenders of Wildlife

Janis Searles Jones
Vice President, Legal Affairs and
General Counsel
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Eric Jorgensen
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Earthjustice

Carole Holley
Alaska Program Co-Director
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Mike Daulton
Senior Director, Government Relations
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Marilyn Heiman
Director, U.S. Arctic Program
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Justin Allegro
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National Wildlife Federation

Dan Ritzman
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Sierra Club

Charles M. Clusen
Director, Alaska Project
Natural Resources Defense Council

Nicole Whittington-Evans
Acting Alaska Regional Director
The Wilderness Society

cc:

David Hayes, Deputy Secretary of the Interior
Liz Birnbaum, Director, Minerals Management Service

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

Accountability * Integrity * Reliability



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.

OFFSHORE OIL AND GAS DEVELOPMENT

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

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.

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Abbreviations List

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

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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

¹Petroleum 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

²43 U.S.C. §§ 1331-1356.

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

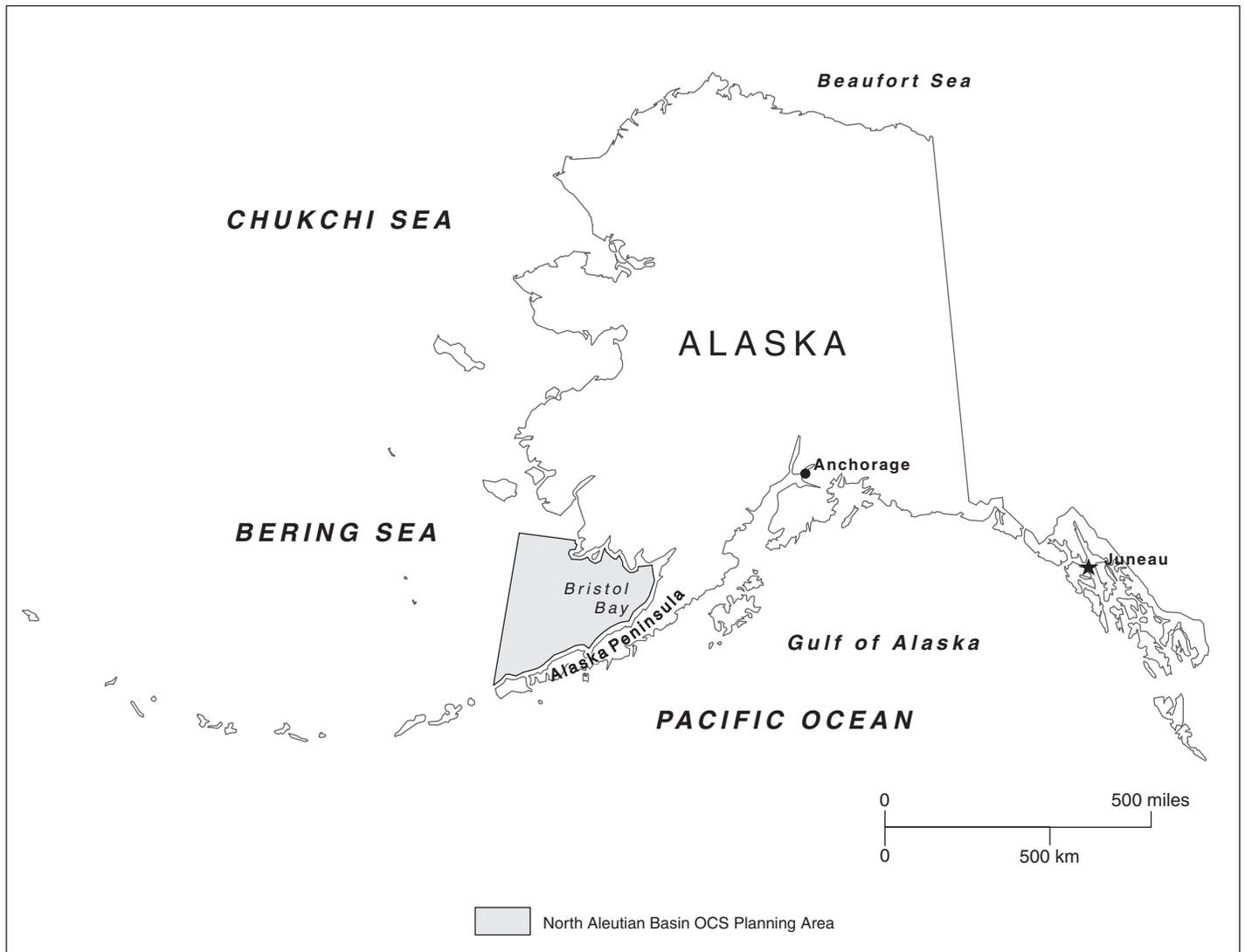
Administration's (NOAA) National Marine Fisheries Service (NOAA Fisheries Service), and the Environmental Protection Agency. We also spoke with officials from Alaska state agencies, including the Alaska Department of Natural Resources' Division of Oil and Gas. We met with representatives from the oil 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,

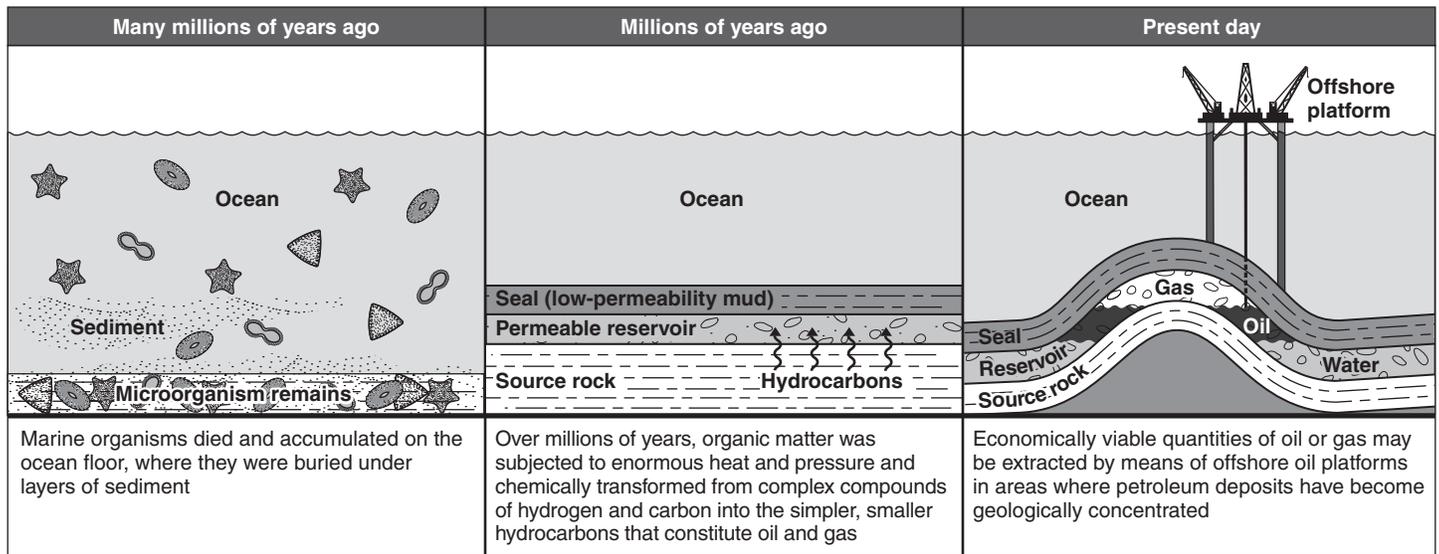
Pacific halibut, and pollock. The region is also home to several seabird and marine mammal species listed as endangered or threatened under the Endangered Species Act.⁴

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

⁴The 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.

⁵Seismic 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,

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

⁷In 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.

^aF95 means a 95 percent chance that the resources will equal or exceed the given quantity.

^bF5 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.

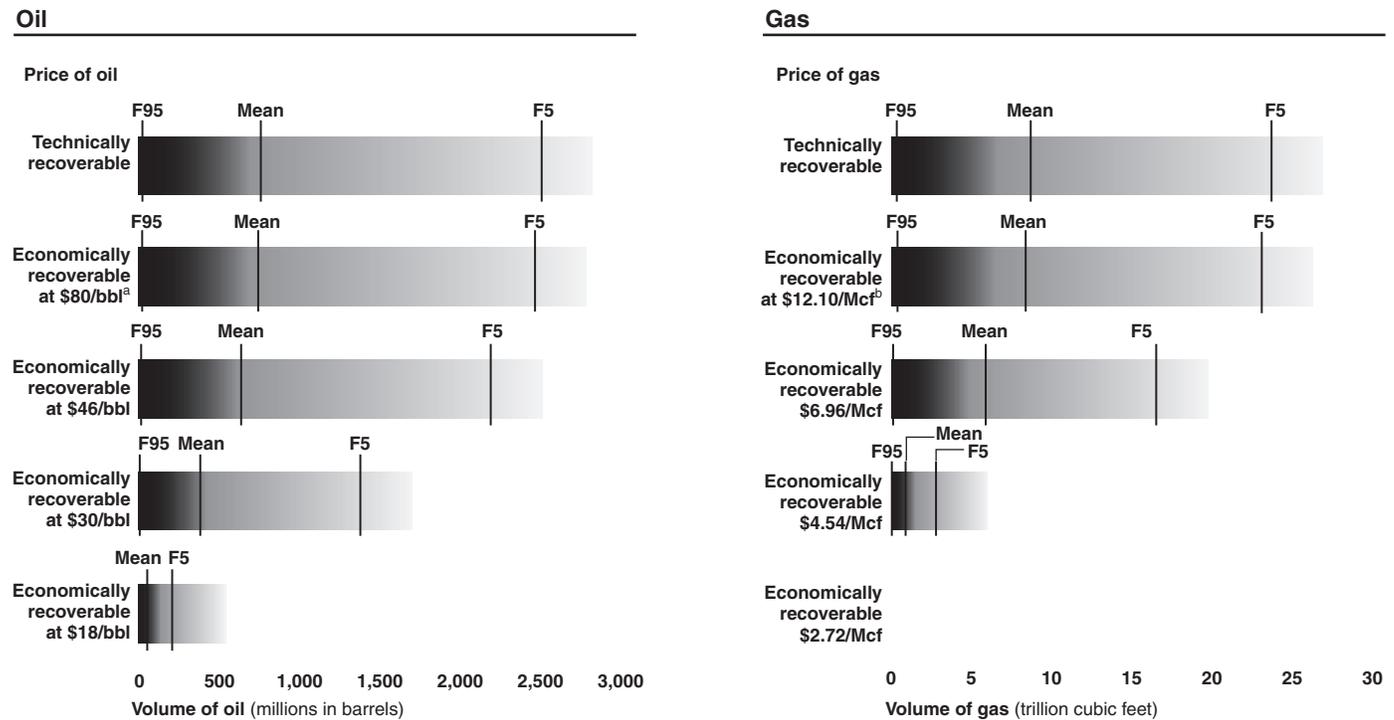
The Amount of Oil and Gas Considered Economically Recoverable Depends on a Variety of Factors

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.

⁸At 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.

^aPrices of oil are given in dollars per barrel (bbl).

^bPrices 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-

⁹Transporting 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.

^aThe 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

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

¹¹A 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

¹²The 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

¹³Equivalent 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.

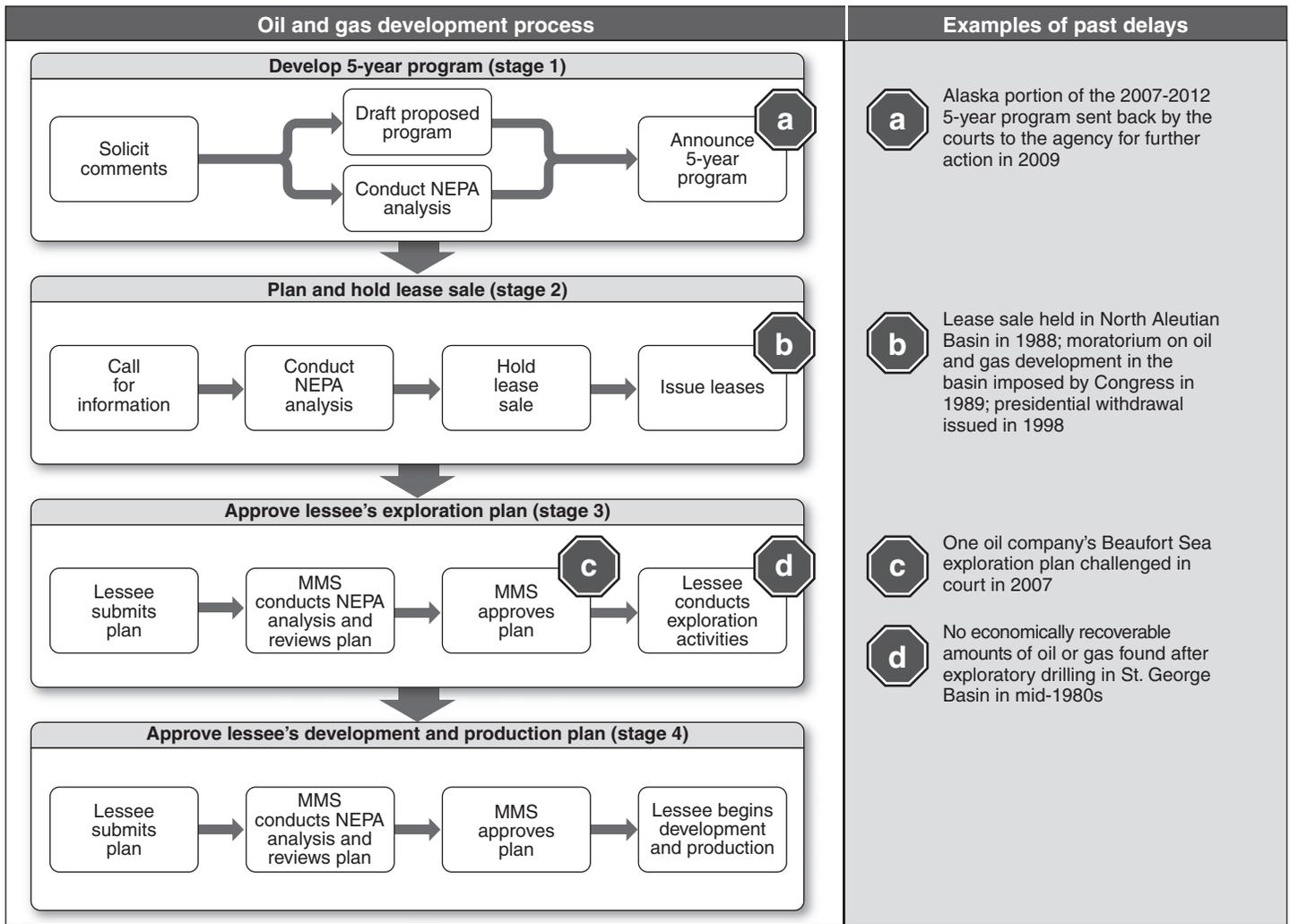
**Stage 4: After Exploration,
MMS Is to Consider a
Development and Production
Plan for Approval**

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

¹⁴Department 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-current¹⁵ 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 Quality¹⁶—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 NEPA¹⁷—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

¹⁵We 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.

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

¹⁷40 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

¹⁸Minerals 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).

¹⁹Minerals 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.

²⁰In *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

²²Internal 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.

²³Minerals 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.

²⁴When 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

²⁵MMS 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.

²⁶MMS’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.

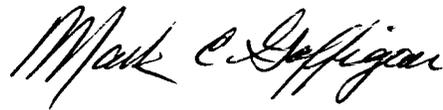
Agency Comments

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,

A handwritten signature in black ink that reads "Mark E. Gaffigan". The signature is written in a cursive style with a large, stylized 'M' and 'G'.

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



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.

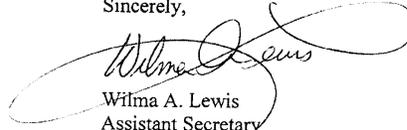
Information Sharing: The MMS will take appropriate steps to ensure that the Alaska Outer Continental Shelf (OCS) Region follows the 2008 MMS policy for making information available, including proprietary information, to all staff involved in the technical or environmental review of that information. 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.

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

2

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.

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May 19, 2010

Arctic Drilling Proposal Advanced Amid Concern

By WILLIAM YARDLEY

A proposal to drill for oil in the Arctic Ocean as early as this summer received initial permits from the Minerals Management Service office in Alaska at the same time federal auditors were questioning the office about its environmental review process.

The approvals also came after many of the agency's most experienced scientists had left, frustrated that their concerns over environmental threats from drilling had been ignored.

Minerals Management has faced intense scrutiny in the weeks since the oil spill in the Gulf of Mexico. An article in The New York Times reported that it failed to get some environmental permits to approve drilling in the gulf and ignored objections from scientists to keep those projects on schedule.

Similar concerns are being raised about the agency's handling of a plan by Shell Oil to begin exploratory drilling in the Arctic's Beaufort and Chukchi Seas.

The Shell plan has stirred controversy for many years among environmentalists and advocates of the endangered bowhead whale, which is legally hunted in the area for subsistence by Alaska Natives.

Opponents have argued that an oil spill would be virtually impossible to contain, given the region's remoteness, its severe weather and ice and limited onshore support.

The investigation of the Minerals Management's Alaska office by the Government Accountability Office, completed in March, examined the environmental review process for proposed offshore leasing in southwest Alaska, which has since been canceled.

But it also raised questions about future leasing plans in the Beaufort and Chukchi at the time the agency was deciding whether to allow Shell to go forward on leases it had purchased. The Shell project received critical initial permits from Minerals Management last fall, though it still needs several final approvals.

The G.A.O. found that the Alaska branch deliberately avoided establishing consistent guidelines for determining whether future leases would cause significant environmental impacts in the Arctic — a finding that could require further examination and delay or prevent drilling.

It noted that Minerals Management had yet to complete a handbook for reviewing environmental issues that the Department of Interior, which oversees the agency, had asked it to write.

“When we talked to managers, the story was that, ‘Well, we have the institutional knowledge — if you put things in the handbook, it gets outdated,’ ” said Mark Gaffigan, a director on the G.A.O.'s natural resources and environment team and the author of the report.

Yet when G.A.O. investigators interviewed many of the agency's environmental analysts in Alaska, Mr. Gaffigan said, "They felt there was a need. They wanted consistent ways for how the analysis was to be done."

The findings described in the G.A.O. report were echoed in interviews with current and former scientists and employees at the Alaska office of Minerals Management and bolstered by documents posted online by Public Employees for Environmental Responsibility.

All of those interviewed, including some who have found other government jobs, spoke on condition of anonymity out of fear of repercussions at work.

The lack of clear guidance in the environmental review process was exacerbated by high turnover among scientists at the agency, many of whom said in interviews that they left for other jobs because they had been pressured to rewrite their work or had it rewritten for them and that they were perceived as obstacles in the way of drilling. Managers, on the other hand, tended to stay.

"My impression was they had predetermined decisions and if you didn't get with the program you were sort of labeled and ostracized, really," said one former minerals agency scientist. "But if you went along with the program and didn't do anything to obstruct anything, they would treat you well, promote you, give cash awards."

A spokesman for the minerals agency said that "M.M.S. Alaska takes the G.A.O. report very seriously and in fact even before the final report came out, we began addressing issues it raised." He declined to discuss accusations by agency scientists that they faced pressure.

Even as the administration has begun a review of its offshore leasing program and temporarily halted new offshore drilling projects, Shell says it hopes to begin drilling this summer.

The company was buoyed last week, when a three-judge panel of the United States Court of Appeals for the Ninth Circuit rejected claims that Minerals Management's initial environmental review of the project was flawed.

Several people involved in the lawsuit noted that environmental reviews of an earlier version of the Shell plan approved by Minerals Management had been rejected by the court in 2008.

Since that earlier decision, the current and former employees said in interviews, instead of making environmental reviews more thorough and transparent, the Alaska office tightened control, limiting which scientists have access to information about threats and limiting discussions that can improve analysis. They said the tighter control limited documents through which the court could view the process.

"The development of these environmental assessments was done in secret," by inexperienced staff, a Minerals Management employee in Alaska said. The employee said that the process "was horrible, they ignore everything" and that drilling "would be a disaster for the bowhead and the Natives who take bowhead through subsistence."

The Ninth Circuit decision did not address questions raised by the gulf spill or in the G.A.O. report.

The G.A.O. report found the Alaska office's handling of information "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," the National Environmental Policy Act.

A senior Interior Department official responded to the G.A.O. report in March, saying the "department generally agrees with your findings." The department said that it would publish a Web-based guidebook for conducting environmental reviews by the end of the year and that Minerals Management in Alaska would "ensure employees are provided with all information to effectively and efficiently perform their duties and responsibilities."

The Shell project still faces scrutiny by other agencies that have raised questions about Arctic drilling. In a letter to Minerals Management last September, Jane Lubchenco, the head of the National Oceanic and Atmospheric Administration, warned against leasing in the Arctic Sea.

Shell has vowed to implement aggressive efforts both to prevent a spill and contain one. Shortly after Interior Secretary Ken Salazar proposed reconfiguring the agency, John Goll, the head of the Alaska region, called an "all hands" meeting, according to a staff member there.

Afterward, people lingered to eat a cake decorated with the words, "Drill, Baby, Drill."

U.S. agency overseeing oil drilling ignored warnings of risks

By Juliet Eilperin
Washington Post Staff Writer
Monday, May 24, 2010; 11:47 AM

The federal agency responsible for regulating offshore oil drilling repeatedly ignored warnings from government scientists about environmental risks in its push to approve energy exploration activities quickly, according to numerous documents and interviews.

Minerals Management Service officials, who receive cash bonuses for meeting federal deadlines on leasing offshore oil and gas exploration, frequently altered their own documents and bypassed legal requirements aimed at ensuring drilling does not imperil the marine environment, the documents show.

This has dramatically weakened the scientific checks on offshore drilling that were established under landmark laws such as the Marine Mammal Protection Act and the National Environmental Policy Act, according to those who have worked with MMS, which is part of the Interior Department.

"It's a war between the biologists and the engineers," said Thomas A. Campbell, who served as the National Oceanic and Atmospheric Administration's general counsel under George H.W. Bush. "They just have a very different worldview, and sometimes the engineers simply don't listen to the biologists."

MMS officials in both Alaska and the Gulf of Mexico have instructed agency scientists to avoid triggering environmental reviews that would delay drilling.

When scientists elsewhere in the federal government, such as NOAA and the Marine Mammal Commission, have tried to raise red flags under both the Bush and Obama administration, their calls have gone largely unheeded.

Last year, for example, federal marine mammal experts warned the MMS that it had minimized the environmental risks of drilling when assessing the impact of auctioning leases in four areas in Alaska's Beaufort and Chukchi seas.

MMS officials did not respond, although they are required under law to either adopt the recommendations from the experts or explain within 120 days why they rejected them. Their draft analysis was not finalized before the administration postponed further action on lease sales in March.

MMS officials also ignored the advice of its staff experts. In 2006, then-MMS biologist Jeff Childs provided a detailed analysis of how the Exxon Valdez spill had harmed generations of fish in Prince William Sound, and how a future spill could do the same in the Beaufort Sea. But Childs's conclusion that "a large oil spill . . . is likely to result in significant adverse effects on

local [fish] populations requiring three or more generations to recover" would have forced MMS to conduct a full Environmental Impact Statement before auctioning off a lease there.

"I have concerns about Jeff's analysis and will not insert it into the [Environmental Assessment] being sent to HQ at this time," wrote Deborah Cranswick, chief of the environmental assessment section at MMS, in a June 23 e-mail to her Alaska colleagues. "I believe that Regional management needs to review it first because Jeff has concluded new significant impacts from oil spills. This will trigger an EIS -- and thus delay the lease for at least a year."

Six days later, Paul Stang, Alaska MMS regional supervisor for leasing and the environment, sent a hand-written note to Childs saying, "As you know, a conclusion of significance under NEPA means an EIS and delay in sale 202. That would, as you can imagine, not go over well with HQ and others."

When Childs balked at deleting the finding, another manager rewrote it so that the lease process could move ahead without delay. The government held the sale in April 2007, receiving \$42 million in bids from Shell, Conoco, BP, ENI Petroleum U.S., and Total E&P USA. Native American groups unsuccessfully challenged the sale in court, and part of Shell's Beaufort exploration plan for this summer includes lease blocks from sale 202.

MMS staff analysts encountered similar resistance after reviewing the exploration plan Shell submitted for the Beaufort Sea in 2007. One predicted "the proposed action has the potential to cause significant impacts to a variety of protected wildlife resources." Another wrote: "Shell's exploration plan lacks sufficient detail and makes unreasonable conclusions; the details it does provide are disturbing." The agency approved the plan.

"Both in the case of MMS and NOAA, there's this agency culture that their job is to protect oil and gas activity," said Layla Hughes, senior program officer for the World Wildlife Fund's Arctic policy.

MMS actions are shaped in part by the 2005 regulation it adopted that assumes oil and gas companies can best evaluate the environmental impact of their operations.

The rule governing what information MMS should receive and review before signing off on drilling plans states: "The lessee or operator is in the best position to determine the environmental effects of its proposed activity based on whether the operation is routine or non-routine."

MMS acknowledged in a May 2000 draft environmental analysis of deepwater drilling in the Gulf of Mexico, "The oil industry's experience base in deepwater well control is limited," and that a massive spill "could easily turn out to be a potential showstopper for the [Outer Continental Shelf] program if the industry and MMS do not come together as a whole to prevent such an incident." But when it finalized the document that same month, it jettisoned those two statements and concluded there was no need to prepare an Environmental Impact Analysis for deepwater drilling: "Most deepwater operations and activities are substantially the same as those associated with conventional operations and activities on the continental shelf."

In an interview Friday, Interior Deputy Secretary David Hayes acknowledged that MMS had made decisions that lacked scientific justification but said the administration had put Arctic leasing on hold and enlisted U.S. Geological Survey scientists to ensure future decisions had scientific integrity.

"There are certainly historical issues there that we're interested in addressing and reforming," Hayes said. "I think we're in the process of getting a cultural change in the scientific part of MMS. We're making sure the science is not a means to an end, but an independent input to the process."

When asked why MMS did not comply with the law, Interior spokeswoman Kendra Barkoff replied, "We are going to continue to be aggressive in our reform agenda to ensure that all laws are followed."

But this pattern of dismissing biologists' input has continued under the Obama administration. The National Oceanic and Atmospheric Administration must issue a permit to energy companies when their activities could affect marine mammals and judge whether companies have established adequate programs to monitor and minimize their impact on these species.

Last June, an NOAA review panel issued a scathing critique of Shell Exploration and Production Co.'s plan to conduct an open-water marine survey in Alaska's Chukchi Sea. There "are no clearly stated 'scientific objectives' " in Shell's proposal, wrote Sue Moore from NOAA's Office of Science and Technology. "The plan makes a number of misleading statements that should be brought to the attention of the authors," wrote Tim Ragen, the Marine Mammal Commission's executive director.

But NOAA's Office of Protected Resources gave Shell the permit, without demanding modifications. Ragen said MMS has consistently minimized the environmental risks of offshore energy exploration.

"Policymakers need to know we don't have perfect information on many aspects of oil and gas operations. In essence, we're playing a game of probabilities involving significant uncertainty," he said. But the commission gets no "feedback on our recommendations, so I don't know how much attention they get."