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Republican Policy Committee

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Revisiting Energy Development in the Gulf of Mexico

Evaluating the Risks of Opening an Additional Area to Energy Development

Executive Summary

- Congress's best short-term strategy for achieving reduced energy prices for American consumers is to provide access to the resources, such as oil and natural gas, that have a proven track record for relative affordability, availability, and transportability.

- This paper is the second of two papers discussing the benefits and potential risks to opening a portion of Lease Sale 181 in the deep waters of the Gulf of Mexico to energy exploration and development.

- High energy costs due to supply problems, particularly for natural gas, have been tied directly to a significant loss of manufacturing jobs. Moreover, in 2005, natural gas consumers spent $200 billion on natural gas, which is four times as much as was spent in 1999.

- As with virtually any economic activity, energy development in the deep waters of the Gulf of Mexico carries risk. Policy makers must attempt to evaluate the *likelihood* of harm and then weigh the potential costs of action against the costs of inaction.

- Thirty years of experience with offshore energy production shows that deep-water energy activities can take place with little, if any, measurable harm to economic interests and environmental resources.

- The likelihood of an oil spill from deep-water platforms reaching U.S. shores is extremely small, and improvements in extraction technology have significantly reduced the volume of oil spills.

- Even though there has been a significant increase in energy extraction and related activity in U.S. waters since 1969, there has actually been a substantial *decrease* in the volume of oil spills related to energy extraction activities.

Introduction

Congress's best short-term strategy for achieving reduced energy prices for American consumers is to provide access to the resources, such as oil and natural gas, that have a proven track record for relative affordability, availability, and transportability. This paper is the second of two papers discussing the benefits and potential risks to opening a portion of Lease Sale 181 in the deep waters of the Gulf of Mexico to energy exploration and development.[1] The decision of whether to open additional acres to energy development must be made with the realization that there are costs associated with both options – conducting energy extraction activities or leaving the energy in the ground.

The first paper, "Revisiting Energy Development in the Gulf of Mexico," issued June 21, discussed the U.S. energy situation, the history of Lease Sale 181, and its resource potential. It also discussed the economic costs of high energy prices and noted the potential of energy production in Lease Sale 181 to reduce U.S. energy prices, particularly for natural gas. This paper evaluates the risks to opening that area of the Gulf of Mexico to energy exploration and development. In weighing the risks and benefits, this paper concludes that the benefits of doing so far outweigh the risks.

Evaluating Economic and Environmental Concerns

The primary opposition to increased energy development in the Gulf of Mexico comes from economic and environmental concerns over potential oil spills and their effect on marine and coastal environments.[2] The economic concerns center around tourism. For instance, Florida beaches and near-shore coastal waters attract 33 million visitors each year, bringing billions of dollars into the state.[3] A major oil spill reaching a coastal state's shores could have an adverse economic effect on its tourism industry. Environmental concerns include the potential for oil spills and other discharges, as well as potential harm to marine wildlife from noise related to exploration and production operations. The obvious question, then, is what is the likelihood of such harm?

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[1]See RPC paper, "Revisiting Energy Development in the Gulf of Mexico," June 21, 2006. As detailed in that paper, S. 2253, the bill reported by the Senate Energy Committee in April, requires the Secretary of the Interior to offer for oil and gas leasing a portion of the area known as Original Lease Sale 181. The main difference in the boundaries between S. 2253 and the original area is that the area under the bill is scaled back to address opponents' concerns of drilling activities closer to the coastlines. See that paper for a map of the various boundaries.

[2]See, for example, Colleen M. Castille, Florida Department of Environmental Protection, Testimony before the House Committee on Resources, June 14, 2006; and Natural Resources Defense Council (NRDC), *Sounding the Depths II: The Rising Toll of Sonar, Shipping and Industrial Ocean Noise on Marine Life*, November 2005.

[3]Colleen M. Castille, June 14, 2006.

Putting the Risks in Context

As with virtually any economic activity, energy development in the deep waters of the Gulf of Mexico carries risk. A major oil spill, for example, theoretically could occur and could reach the U.S. coast, thereby imposing major costs on the affected state. Such a spill could also inflict significant, even irreversible, harm on certain marine species. Nobody denies these possibilities; nor should the mere possibility of harm (no matter how small) justify inaction. Policy makers attempt to weigh risks and benefits – they evaluate the *likelihood* of harm and then weigh the potential costs of action against the costs of inaction. When framed in this way, sensible decisions can be made on the acceptable level of risk. And, as this paper will detail, an actual analysis of the last 30 years of experience with offshore exploration and production activities shows that any harms are likely to be small in size and cost, and are unlikely to pose a significant threat to the survival of any species populations.

Natural Seeps on Ocean Floor Account For Most of the Oil in the Sea

There are already significant energy activities in the marine environment, but even the cumulative impact of the small spills and leaks associated with offshore energy development in recent decades has been relatively minor. This is because most of the oil found in the oceans originates from nature itself. According to the National Research Council, an arm of the U.S. National Academy of Sciences, 63 percent of total petroleum inputs into the U.S. marine environment comes from *natural seeps* on the ocean floor. So, even if all human activity ceased, there would still be naturally occurring oil in the sea.

Human activities other than offshore oil and gas development also contribute much more to the amount of petroleum in the sea than does energy development. The other sources are:

- onshore municipal/industrial waste and runoff (22 percent);
- atmospheric fallout from consumption (8 percent);
- marine transportation (3 percent); and
- recreational marine vehicles (2 percent).
- *Only 2 percent of total petroleum inputs into the U.S. marine environment originates from offshore oil and gas development activities*.[4]

The graphic on the following page breaks down the various sources of petroleum found in U.S. waters.

Two questions thus present themselves: 1. Is there any reason to believe that increased development would significantly increase the relatively small impact of current activity? 2. How would this risk compare to potential benefits?

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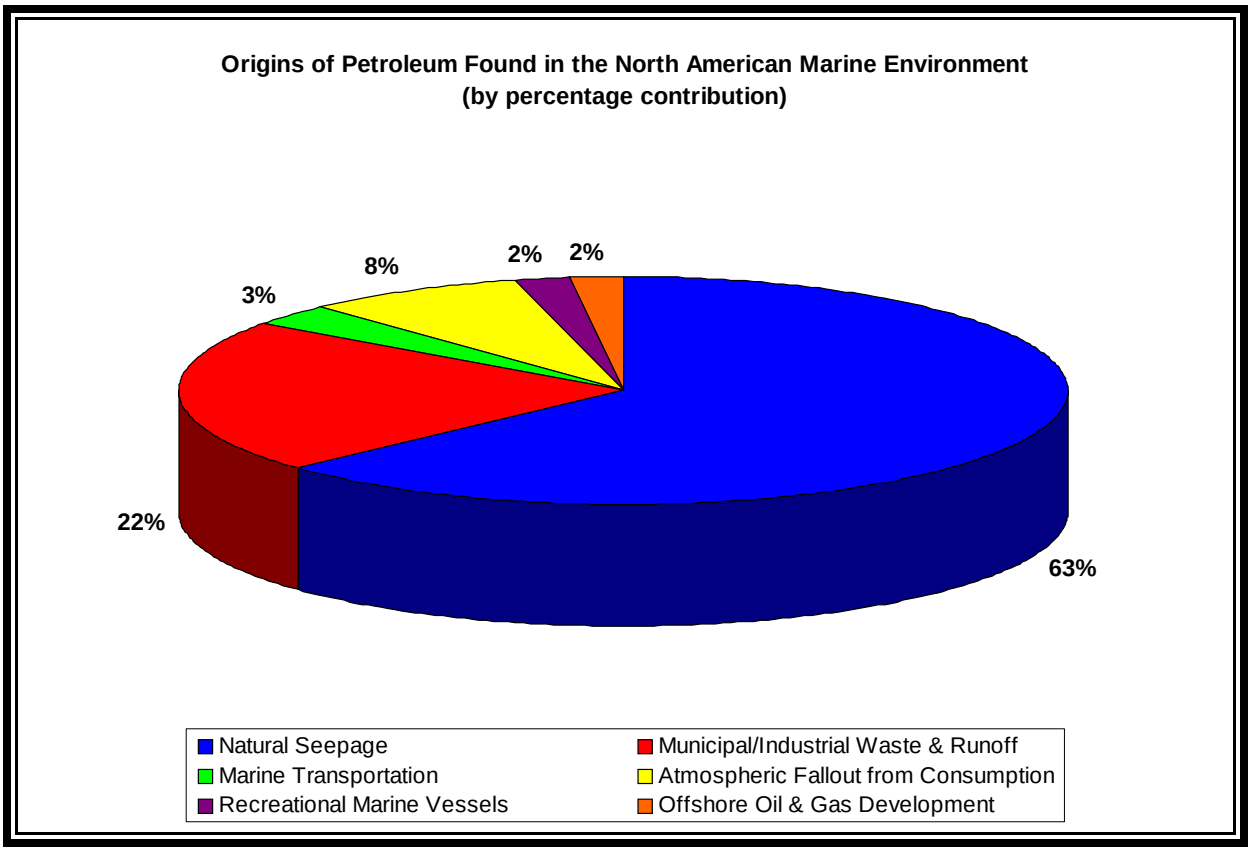
[4]National Research Council, *Oil in the Sea III: Inputs, Fates, and Effects*, Washington, D.C., National Academies Press, 2003.



Source: National Research Council

As to the first question, there's no reason to believe that opening additional acreage of the Gulf of Mexico to energy exploration and production, as provided in S. 2253, the Energy Committee reported bill, is likely to substantially add to this percentage. This is largely due to continued technology improvements. The costs incurred from oil spills many decades ago induced industry to invest heavily in spill-prevention and mitigation technology. These environmental protections, such as "automatic subsea well shut-in devices," "sub-seabed safety valves," and "facility and stand-by cooperative spill containment and cleanup technology" provide multiple layers of protection.[5]

This technology is proving effective. A review produced by the U.S. Coast Guard shows that, even though there has been a significant increase in energy extraction and related activity in U.S. waters since 1969, there has actually been a substantial *decrease* in the volume of oil spills related to energy extraction activities. During the period 1971-1980, total oil-spill volume averaged 3.6 million barrels per year. During the 1981 to 1990 period, the average volume decreased to an average of 2.14 million barrels per year, and from 1991 to 2000, the average

[5]Timothy Parker, February 16, 2006.

plummeted to less than a half million barrels per year.[6] In other words, oil-spill volume has consistently fallen since 1969 while production has increased substantially.

<u>Risk Assessment Via Environmental Impact Study Has Been Extensive</u>

The legal process of allowing deep-water energy development, like that contemplated for Lease Sale 181, to go forward is preceded by an exhaustive and comprehensive environmental assessment to determine whether the level of risk is acceptable. As noted in the previous paper, President Clinton's Interior Secretary, Bruce Babbitt, adopted a five-year leasing program (1997-2002) to allow eventual energy exploration and development in the Original Lease Sale 181 area. That paved the way for the Environmental Impact Study (EIS), conducted by the Minerals Management Service (MMS), to begin. The assessment, which provided substantial opportunity for public comment, was completed in June 2001.[7] Based on the EIS, MMS decided to go forward with lease sale.[8]

Oil Spills From Offshore Energy Development are Very Rare

Major oil spills associated with U.S. offshore oil and gas production have been virtually eliminated. Indeed, since 1980, there has not been a single, significant oil spill from a U.S. exploration and production platform.[9] The last oil spill to reach U.S. shores occurred 37 years ago, in 1969, in California's Santa Barbara Channel.[10] Further, there is *no* documented evidence of *any* oil spill occurring in U.S. waters more than 12 miles from the shore reaching the shore.[11] In summary, deep-water energy exploration and production can and do occur with very little impact.

Using this experience, S. 2253 (the Domenici-Bingaman bill) mandates that development activities will be no closer than 70 miles from the U.S. coast (the closest state would be Alabama) and no closer than 100 miles from the coast of Florida. Although the ocean and wind currents within the Gulf of Mexico are such that a significant oil spill could reach the shores of Florida, the Minerals Management Service found in its risk analysis that the likelihood of such an occurrence is *very low*.[12] The analysis, conducted in support of the environmental impact statement for the lease sale, used extensive computer simulations of oil spill transport,

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[6]U.S. Coast Guard, *Pollution Incidents In and Around U.S. Waters: A Spill Release Compendium, 1969-2000*, August 2003.

[7]For more details on the exhaustive nature of the EIS process, see Congressional Research Service, *The National Environmental Policy Act: Background and Implementation*, November 16, 2005.

[8]Minerals Management Service, *Final Environmental Impact Statement on Proposed Eastern Gulf of Mexico Oil and Gas Lease Sale 181*, July 2001.

[9]Timothy Parker, Dominion Exploration & Production, Inc., Testimony on behalf of the energy extraction industry before the Senate Committee on Energy and Natural Resources, February 16, 2006.

[10]Timothy Parker, February 16, 2006.

[11]Timothy Parker, February 16, 2006.

[12]U.S. Department of the Interior, Minerals Management Service, Environmental Division, *Oil-Spill Risk Analysis: Gulf of Mexico Outer Continental Shelf in Support of Environmental Impact Statement for Proposed Lease Sale 181*, January 2001.

incorporating realistic data fields of winds and ocean currents in the Gulf of Mexico Lease Sale 181 area. Indeed, the model-based probability is that a significant spill would have a *less-than-one-percent risk* of reaching Florida's shores within three days, a one-percent risk within 10 days, and no more than a 3-percent risk within 30 days. *This analysis assumed that there is no human response to the spill*.[13] In reality, platforms are continually monitored, and any spill would be known and responded to immediately. This suggests that the likelihood of a spill reaching shore would be well less than one percent in reality.

A major test of the resiliency of offshore energy production comes when production facilities, such as platforms and pipelines are hit by major hurricanes. In 2004, Hurricane Ivan completely destroyed seven platforms with a total of 75 wells. But the wells' safety valves held, and only two of the natural gas wells had very minor gas leaks.[14] Last year, Hurricane Katrina reached Category 5 status as it slammed through the heart of Gulf Coast offshore energy operations. Hurricane Rita, which took a similar path, reached Category 4 status. The MMS estimates that 3,050 of the 4,000 platforms and 22,000 of the 30,000 miles of Gulf pipelines were in the direct path of both hurricanes. Yet there were *no significant oil spills from any* offshore wells in the Outer Continental Shelf.[15] Thus, even in the most extreme situations, the industry has shown it can avoid serious environmental harm.

Risk From Other Discharges Found to be Small

Other discharges, such as drilling muds, cuttings, and wastewater, have also been shown to have little harmful effect on marine life. For example, regarding these discharges, the Minerals Management Service has noted, "More than 30,000 wells have been drilled in the Central and Western Gulf, and no one has documented long-term or widespread effects from this drilling. More than 400 exploratory wells are safely drilled in the Gulf of Mexico each year."[16]

Another study examined the impacts of drilling six wells off the shore of Florida; it found no long-term toxic effects.[17] In summary, the MMS has noted, "Some 23 drilling mud discharge field studies and 7 produced water studies were reviewed by EPA as part of the development of their new regulations. None of these studies detected harmful effects to fishes, observed toxic effects, or documented any regional scale impacts."[18]

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[13]U.S. Department of the Interior, Minerals Management Service, Environmental Division, January 2001.

[14]Rebecca Watson, Testimony before the Senate Committee on Energy and Natural Resources, September 6, 2005. One platform near the coast of Louisiana was also destroyed from a mudslide during Hurricane Ivan. Oil and oil products, equaling about 624 barrels, stored on the platform were spilled into the ocean. See, http://www.mms.gov/incidents/SigPoll2004.htm.

[15]Minerals Management Service, *Impact Assessment of Offshore Facilities From Hurricanes Katrina and Rita*, January 19, 2006.

[16]Minerals Management Service (MMS), *Offshore Discharges From Oil and Gas Development Operations - FAQ* – http://www.gomr.mms.gov/homepg/offshore/egom/factshee.html.

[17]Gene Shinn, *Habitat Impacts of Offshore Drilling: Eastern Gulf of Mexico*, U.S. Geological Survey, 1993.

[18]MMS, http://www.gomr.mms.gov/homepg/offshore/egom/factshee.html.

No Evidence of Harm to Marine Life From Exploration-Related Noise

Concerns also have been raised about the possible adverse effects of ocean noise on marine mammals, such as whales and dolphins. Seismic methods used to discover oil below the ocean floor are one potential source of harm. These methods include the use of "airguns" to produce sound waves; these are reflected back from rock layers below the sea floor. A lengthy report produced by the Natural Resources Defense Council (NRDC) in 2005 raised the issue of noise in the sea and its effect on marine life. Most of the discussion in the report focuses on the effects of the use of sonar by the military (a discussion which is outside the scope of this paper). With regard to energy activities, it claims that "other sources of noise, such as the airguns used in seismic surveys" may have some effect on marine mammals.[19] The report itself acknowledges, however, that the anecdotal evidence of possible harm from offshore energy exploration is speculative.

In 2003, the National Research Council pointed out that, "Remarkably few details are known about the characteristics of ocean noise, whether it be of human or natural origin, and much less is understood of the impact of noise on the short- and long-term well-being of marine mammals and the ecosystems on which they depend."[20] The MMS acknowledges the lack of conclusive evidence one way or the other, but notes that "seismic surveys cover thousands of survey miles yearly throughout the world's oceans, with no reported effects on marine mammal numbers or distribution in the surveyed areas."[21] In its environmental assessment of deep-water exploration and production on Lease Sale 181, MMS determined that "no significant adverse impacts to any of the Gulf resources are expected."[22] It further noted, "The potential for adverse but not significant impacts was identified for marine mammals (except the manatee) and commercial and recreational fisheries. The potential for impacts ranges from negligible to potentially adverse but not significant for manatees, benthic communities, coastal and marine birds, sea turtles, and fishes." In other words, although adverse effects to individual animals can be expected, the effects are not expected to endanger species populations.[23]

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[19]NRDC, November 2005.

[20]National Research Council, *Ocean Noise and Marine Mammals*, Washington, D.C., National Academies Press, 2003.

[21]MMS, *Answers to Questions about Offshore Oil and Gas* – http://www.mms.gov/omm/pacific/offshore/oil-and-gasfaq.htm.

[22]MMS, *Geological and Geophysical Exploration for Mineral Resources on the Gulf of Mexico Outer Continental Shelf: Final Programmatic Environmental Assessment*, July 2004.

[23]MMS, July 2004. The MMS uses three classifications for harm to marine resources, "significant adverse impact," "adverse but not significant impact," and "negligible impact." In its environmental impact statement, the MMS found a "potential for adverse but not significant impacts." This can mean that mortality or serious injury to marine mammals may occur, but not in excess of the "potential biological removal level." This level is the "maximum number of animals, not including natural mortalities, that may be removed from the marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population." It can also mean "short-term displacement of marine mammals from preferred feeding, breeding, or nursery grounds"; or "some disruption of behavioral patterns, but to an extent that is unlikely to adversely affect a species."

Both technological and regulatory precautions are being taken to avoid harm to marine life. Numerous technologies have been and are being developed to reduce noise to protect marine and animal life.[24] The MMS notes that the National Marine Fisheries and other marine mammal researchers continue to study this issue. "In the interim, to reduce the chance of impacts on marine mammals, proper precautions are being taken."[25]

Weighing the Risks and the Benefits

The previous RPC paper on this issue discussed the substantial economic harm imposed on Americans due to high energy costs.[26] The high cost of natural gas, for example, has led directly to significant job losses in the manufacturing sector and has reduced consumers' disposable income. Because natural gas is a regional commodity, development of that domestic resource would have a direct and substantial effect on natural gas prices in the United States.

This paper suggests that the likelihood of harm to people or the environment as a result of deep-water energy exploration and production in the area provided for under the Domenici-Bingaman bill is very small. Thus, the sensible policy decision would be to go forward with developing the area.

Conclusion

An examination of the excellent environmental record of deep-water drilling activities and the available scientific evidence assessing risk suggest that the additional exploration and development that would come from the acres provided for under S. 2253 are likely to yield few, if any, measurable, adverse environmental effects to the Gulf region. Meanwhile, such activity clearly would be a boon to U.S. energy consumers and to the economy as a whole.

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[24]U.S. Department of Energy, *Environmental Benefits of Advanced Oil and Gas Exploration and Production Technology*, October 1999.

[25]MMS, *Answers to Questions about Offshore Oil and Gas* – http://www.mms.gov/omm/pacific/offshore/oil-and-gasfaq.htm.

[26]RPC, June 21, 2006.