



MARINE MAMMAL COMMISSION

1 November 2010

Mr. Christopher A. Smith
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585

Dear Mr. Smith:

The Marine Mammal Protection Act was enacted in 1972 with the primary objective of maintaining the health and stability of marine ecosystems. The Act established the Marine Mammal Commission to oversee and advise federal officials regarding activities that may adversely affect marine mammals and the ecosystems upon which they depend. The work of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling (Oil Spill Commission) is of great interest to the Marine Mammal Commission. After consulting with its Committee of Scientific Advisors on Marine Mammals, the Marine Mammal Commission offers the following recommendations and rationale to assist the Oil Spill Commission with its important review.

RECOMMENDATIONS

The Marine Mammal Commission recommends that the Oil Spill Commission—

- not only identify the proximate causes of the Deepwater Horizon oil spill but also take a critical look at the regulatory and social environment in which this event occurred;
- develop and recommend measures to reduce the likelihood that faulty judgment and human error may contribute to similar events; examples of such measures include distributing on-site decision-making authority among multiple parties or persons, requiring inspections or establishing and requiring compliance with explicit criteria before initiating each major action involved in oil and gas production, requiring off-site review and approval before major drilling actions are taken, and ensuring that decision-makers have the authority, means, and incentive to make cautious, sound judgments even if that means delaying drilling and production;
- call for development of a national database of all oil and gas operations in U.S. waters, the equipment used, the locations and pertinent environmental conditions, the accidents or failures that have occurred, their causes, and the measures taken to address them;
- call for mandatory standardized testing of all major types of equipment and technology used in oil and gas operations so that manufacturers, the oil and gas industry, and government regulators can identify sources of heightened risk and take the steps necessary to reduce that risk;
- make recommendations regarding how to improve the number, training, qualifications, and practices of government regulators to ensure adequate industry regulation;
- review the environmental analyses prepared for the Deepwater Horizon drill site, including the BP oil spill response plan, to identify their shortcomings and make recommendations to address them; in doing so, the Oil Spill Commission should consider, among other things, whether the environmental analyses were sufficiently detailed, systematic, and

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- comprehensive to be reliable indicators of all the risks involved in this project, including realistic worst-case scenarios;
- evaluate the role our society played in creating the conditions and circumstances that led to the Deepwater Horizon oil spill and make recommendations that will lead to a comprehensive national energy policy that, perhaps more than any other action, will reduce the risk of future spills;
- pay close attention to the quantity and quality of baseline population and health information on marine mammals, seabirds, turtles, and other wildlife in the Gulf of Mexico and, where it identifies shortcomings in that information, make recommendations for its improvement;
- examine the balance between collection of essential information and multiple review processes and consider whether information standards ought to be imposed to ensure that the environmental review process is not only transparent and accessible to the public but also adequately informed by the available information; and
- evaluate the nature, impacts, and efficacy of response methods and the apparent lack of preparation for addressing problems that could and should have been anticipated by the oil and gas industry and government regulators.

RATIONALE

Executive Order and Mission

The President created the Oil Spill Commission by Executive Order on 21 May 2010. Section 3 of the order directed the Commission to—

- (a) examine the relevant facts and circumstances concerning the root causes of the Deepwater Horizon oil disaster;
- (b) develop options for guarding against, and mitigating the impact of, oil spills associated with offshore drilling, taking into consideration the environmental, public health, and economic effects of such options, including options involving:
 - (1) improvements to Federal laws, regulations, and industry practices applicable to offshore drilling that would ensure effective oversight, monitoring, and response capabilities; protect public health and safety, occupational health and safety, and the environment and natural resources; and address affected communities; and
 - (2) organizational or other reforms of Federal agencies or processes necessary to ensure such improvements are implemented and maintained.
- (c) submit a final public report to the President with its findings and options for consideration within 6 months of the date of the Commission's first meeting.

Root Causes of the Spill

The Oil Spill Commission's Web site (<http://www.oilspillcommission.gov/>) revised part (a) of its mission to read: "[e]xamine the facts and circumstances to determine the cause of the Deepwater Horizon Oil Disaster." The revised statement excludes reference to the "root causes" of the spill, which has substantial implications for the Commission's work and findings.

The Oil Spill Commission must conduct an indepth review of the root causes of the spill, as originally directed, if its report is to provide our nation with guidance that will reduce significantly the likelihood of future spills and potential major disruptions of marine ecosystems. To that end, the Commission must examine not only the immediate events and decisions that led to the spill but also the regulatory and social circumstances that allowed the chain of events and decisions to occur. Taken together, the root causes range from faulty judgment and equipment at the drill site to inadequate government regulation and, ultimately, to our nation's failure to develop and implement a national energy plan that reduces the demand for oil and gas. The Marine Mammal Commission therefore recommends that the Oil Spill Commission not only identify the proximate causes of the Deepwater Horizon oil spill but also take a critical look at the regulatory and social environment in which this event occurred.

Faulty Judgment and Human Error: News reports and congressional testimony suggest that faulty judgment and human error were proximate causes of this event. This should not be surprising inasmuch as oil and gas operators are allowed to balance environmental and other risks against production schedules and economic profit. The Oil Spill Commission has the opportunity to explore the role of faulty judgment and human error and, if it finds fault with on-site decision-making, to consider how to build adequate safeguards into future decision-making protocols or procedures to reduce the likelihood of such a spill and its potentially severe consequences. The Marine Mammal Commission recommends that the Oil Spill Commission develop and recommend measures to reduce the likelihood that faulty judgment and human error may contribute to similar events; examples of such measures include distributing on-site decision-making authority among multiple parties or persons, requiring inspections or establishing and requiring compliance with explicit criteria before initiating each major action involved in oil and gas production, requiring off-site review and approval before major drilling actions are taken, and ensuring that decision-makers have the authority, means, and incentive to make cautious, sound judgments even if that means delaying drilling and production.

Equipment Failure: Failure of the blowout preventer also appears to have contributed to this spill. Each type of equipment and technology used in oil and gas production has a certain probability of failure and a range of consequences if failure occurs. Knowing the general risks associated with wells, pipelines, platforms, and tankers is useful for estimating the overall risk associated with oil and gas operations, but such knowledge alone is not sufficient for identifying those specific pieces of equipment or technology most likely to fail with serious consequences. A general overview of the risks associated with the Deepwater Horizon project might not have

identified the blowout preventer as a potential source of concern. More specific and systematic review of equipment and technology is necessary if events like this one are to be prevented.

Two types of data are of particular value for such specific and systematic review. The first consists of observations from past operations and events that can be used to characterize the failure rate of each type of equipment or control technology being used at drill sites and the consequences if failures occur. The second comes from performance testing of that equipment for the specific purpose of assessing the probability of failure. Manufacturers of such equipment and technology, the oil and gas industry, and government regulators all should be using both sources of information to assess the risks associated with specific aspects of oil and gas operations under various circumstances (e.g., shallow versus deep water, open water versus ice-covered). The failure to collect and use such data constitutes a missed opportunity to better characterize and reduce the risks associated with oil and gas operations. To ensure that oil and gas operators, managers, regulators, and the public, are as well informed as possible regarding potential risks associated with equipment failure, the Marine Mammal Commission recommends that the Oil Spill Commission call for development of a national database of all oil and gas operations in U.S. waters, the equipment used, the locations and pertinent environmental conditions, the accidents or failures that have occurred, their causes, and the measures taken to address them. The Marine Mammal Commission further recommends that the Oil Spill Commission call for mandatory standardized testing of all major types of equipment and technology used in oil and gas operations so that manufacturers, the oil and gas industry, and government regulators can identify sources of heightened risk and take the steps necessary to reduce that risk. Options for addressing excessive risk include (1) appropriate modification of the equipment or technology to reduce the probability of failure, (2) use of alternative equipment that meets safety standards, and (3) development of back-up systems to minimize the consequences if and when the equipment/technology fails. Although equipment age does not appear to have been an issue in this particular instance, the Oil Spill Commission also should review requirements for regular testing of equipment in use as the rate of failure for some equipment (e.g., pipelines, vessels) increases with use.

Inadequate Regulation: The oil and gas industry has an obvious incentive to avoid accidents like the BP Deepwater Horizon oil spill, but it also is subject to an economic conflict of interest. Government regulators provide a check on the industry to ensure that it conducts its activities in a safe manner consistent with the laws and regulations pertaining to oil and gas exploration and development, as well as other applicable statutes and regulations.

During the spill, observers frequently asked whether government responders had the expertise necessary to manage all aspects of the response or were dependent on the industry for that expertise. The same question was and should be asked of regulators, for they too are put in the position of having to depend on the industry if they lack the appropriate expertise. Following the spill, the Bureau of Ocean Energy Management, Regulation, and Enforcement hired a number of new employees to increase regulatory capacity. However, it is not clear whether those new hires have sufficient expertise to perform their intended function. If not, then the Bureau may have more regulators but may not be in a position to better oversight or response. To address this possible

shortcoming, the Marine Mammal Commission recommends that the Oil Spill Commission make recommendations regarding how to improve the number, training, qualifications, and practices of government regulators to ensure adequate industry regulation.

The Deepwater Horizon oil spill was a stark reminder of the risks associated with worst-case scenarios in oil spill development and production. Conceptually, those risks are a function of two main elements: the probability of a worst-case event and the consequences should such an event occur. In its 2000 Deepwater Environmental Assessment¹ the former Minerals Management Service distinguished between a “hazard-based” assessment of the worst case and a “risk-based” assessment, the former focusing primarily on the consequences and the latter focusing on both the probability and consequences. The Service indicated that it considered the risk-based approach to be more appropriate and the Marine Mammal Commission concurs with that conclusion.

However, it is not clear that the Service has generally given due consideration to both probability and consequences of such events. For example, on 30 March 2009 the Marine Mammal Commission wrote to the Minerals Management to express concern that a draft environmental impact statement on lease sales in the Beaufort Sea and Chukchi Sea planning areas tended toward characterizing risks based on their low probability of occurrence, overemphasizing the best possible outcome, without giving due consideration to worst-case scenarios in its tables of impact. This would be similar to a surgeon only describing the best possible outcome to a patient without clearly indicating the probability that something could go wrong and describing the consequences if it does. Importantly, the manner in which risk-related data are presented may have considerable influence not only on decision-making, but also on planning for those situations in which a worst-case spill occurs. In the Deepwater Horizon spill, one could make a compelling argument that lack of planning for a worst-case scenario was a significant impediment to a timely and effective response.

BP’s expectations of the worst case also were off to a considerable degree. In its 2009 oil spill response plan the company discussed three worst-case scenarios, the worst involving a maximum spill of 250,000 barrels from an exploratory well. In its plan, BP also estimated that approximately 491,000 barrels could be recovered per day. In fact, their worst-case scenario amount was only 5 percent of the actual amount of oil spilled at the Deepwater Horizon wellhead. Furthermore, during the entire event, actual response operations removed (by skimming and in-situ burning) only about 8 percent (392,000 barrels) of the oil spilled². BP also did not consider the possibility of a subsurface oil spill in its worst-case scenarios, even though the 1979 Ixtoc I spill in Campeche Bay, Mexico, should have served as a warning of this possibility. As a result, BP’s oil spill response plan did not give due consideration to the requirements for monitoring and recovering subsurface oil.³

¹ Available at www.gomr.mms.gov/PDFs/2000/2000-001.pdf

² NOAA Oil Budget Report, August 4, 2010, available at www.deepwaterhorizonresponse.com/.../Oil_Budget_description_8_3_FINAL.844091.pdf

³ BP’s Oil Spill Response Plan also was not specific to the Gulf of Mexico as sections of it appeared to be cut and pasted from a response plan written for the Arctic. As was noted in the media and at numerous congressional hearings, BP’s Gulf of Mexico plan listed walrus, sea otters, sea lions, and seals as “sensitive biological resources” in the Gulf of Mexico. It also referred to sensitive habitats in the Gulf, including where “Animals come ashore for birthing, resting, or

These all are examples of inadequate risk analysis. To ensure that such shortcomings are addressed, the Marine Mammal Commission recommends that the Oil Spill Commission review the environmental analyses prepared for the Deepwater Horizon drill site, including the BP oil spill response plan, to identify their shortcomings and make recommendations to address them. In doing so, the Oil Spill Commission should consider, among other things, whether the environmental analyses were sufficiently detailed, systematic, and comprehensive to be reliable indicators of all the risks involved in this project, including realistic worst-case scenarios.

One simple way to improve analysis of proposed oil and gas operations would be to allow the Bureau of Ocean Energy Management, Regulation, and Enforcement more time to review and analyze industry exploration plans. On 16 August 2010, the Council on Environmental Quality issued recommendations on the Bureau's policies, practices, and procedures under the National Environmental Policy Act. One of its recommendations was that the Bureau be given more time for analysis; 30 days is simply not enough time to conduct the in-depth analysis needed. The Council also recommended a review of the Bureau's use of categorical exclusions for oil and gas operations. The Marine Mammal Commission concurs with both of these recommendations, particularly in light of the challenges and risks associated with deepwater drilling. Both recommendations would strengthen and place more emphasis on the quality of the environmental review process.

Failure at the Social/Political Level: On 15 September 2008 (and again on 21 September 2009) the Marine Mammal Commission wrote to the former Minerals Management Service that—

The United States has faced an impending energy crisis for decades but has neither responded with adequate foresight and commitment to address the crisis in its earlier stages nor shown the foresight to reduce our national dependence on hydrocarbons and minimize the production of greenhouse gases. Records of the production and use of oil and gas since the enactment of the Outer Continental Shelf Lands Act in 1953 illustrate historical patterns in oil and gas production and use, as do similar records for other energy sources. Those historical records, combined with anticipated population and economic growth, should be sufficient to project future patterns and potential consequences of continuing with a “business as usual” approach. A thoughtful and farsighted plan is needed to move the nation beyond efforts simply to find the next oil field. If left unchanged, the present course would have a number of undesirable consequences, including the acceleration of climate change and its multitude of adverse effects. To avoid repeating the pattern apparent in the past three to four decades, the Marine Mammal Commission recommends that the Minerals Management Service work with the Department of Energy to integrate a new 5-year oil and gas leasing plan with an overall energy conservation plan. The integrated version should include (a) a projection of the country's long-term energy needs based on expected population growth and economic expansion, (b) a

molting, such as marine mammal haul outs and pupping areas” although, again, no pinnipeds or other marine mammal species haul out in the Gulf of Mexico. Also as noted by the media, Dr. Peter Lutz of the University of Miami was listed as a national wildlife expert when in fact he died in 2005.

description of all existing and potential sources of energy and trends in the development of those sources, (c) alternative approaches for meeting projected needs, including conservation, and the potential environmental impacts associated with those alternatives, and (d) a significant large-scale program aimed at reducing per capita energy demand, achieving greater efficiency in ongoing energy use, developing alternate energy sources, and reducing greenhouse gas production.

If our country maintains its current course, then one thing we can all say with confidence is that future spills are certain to occur. A recent review by the Department of the Interior⁴ revealed that the number of spills from platform and rig activities on the Outer Continental Shelf increased from an average of 24 spills per decade from 1960 to 1999 to 72 spills from 2000 to 2009⁵. To meet the growing demand for energy, companies are drilling for more oil and gas, and they are drilling in areas more difficult to reach and more sensitive to spill effects. Given our failure to create, implement, and abide by a national strategy to meet our energy demands while minimizing associated risk, one could argue that, collectively, we are missing an opportunity to reduce the number of future spills and the severity of their effects. In that regard, our society must assume its share of responsibility for this spill and acknowledge the existence of associated risks. We also need to appreciate that those risks will not be eliminated entirely in the future because the possibility of spills cannot be reduced to zero as long as we are dependent upon offshore oil and gas production.

Given the social, economic, and ecological disruption caused by the Deepwater Horizon spill, our society likely will attach great importance to the Oil Spill Commission's analyses and recommendations. Although you may find it more straightforward to highlight the chain of events leading to the failure of the blowout preventer, or the ill-fated decisions that set the chain of events in motion, that alone will not address the President's directive to "examine the relevant facts and circumstances concerning the root causes of the Deepwater Horizon oil disaster." To reduce the likelihood of future spills, the Marine Mammal Commission recommends that the Oil Spill Commission evaluate the role our society played in creating the conditions and circumstances that led to the Deepwater Horizon oil spill and make recommendations that will lead to a comprehensive national energy policy that, perhaps more than any other action, will reduce the risk of future spills.

Guarding Against and Mitigating the Impacts of Oil Spills Associated with Offshore Drilling

The following are additional topics that the Marine Mammal Commission encourages the Oil Spill Commission to consider in its review and report.

Baseline Data: Judgments about the significance of an oil spill generally are tied directly to measures of its adverse impacts, whether they are social, economic, or ecological. Documenting adverse effects is a considerable challenge, even for species as large and conspicuous as marine mammals. Stranded marine mammals are relatively easy to document but, because strandings occur

⁴ Dept. of the Interior. 2010. Increased safety measures for energy development on the Outer Continental Shelf.

⁵ Information on how many of these spills were associated with deepwater rigs was not provided.

at other times and for other reasons, it may not be possible to determine if an animal stranded for reasons related to the oil spill and response or because of unrelated causes. Other marine mammals may be affected by the oil but remain at sea where it may not be possible to observe them (or their carcasses) or to determine the role of oil in their affliction or death. Aerial and shipboard surveys are valuable tools for evaluating marine mammals at sea but provide only intermittent snapshots of the environment and may not be sufficient to detect brief exposures to oil that lead to illness or death. Furthermore, some potential effects on a marine mammal (e.g., impaired reproduction, immune function) may not be evident until long after the spill and may not be detected if monitoring efforts are short-lived.

Because of the difficulty of assessing the impacts during a spill, scientists often must rely on comparisons of pre- and post-spill conditions to look for differences that might be explained by the spill or the spill response (e.g., changes in species abundance or distribution). Such assessment is highly dependent upon the availability of adequate baseline data. The admonition to collect such data was one of the most important lessons gained from the *Exxon Valdez* spill, but that lesson has not been well heeded in the Gulf of Mexico. There, baseline stock assessment information is adequate for only 6 of 58 marine mammal stocks. Collecting baseline data, whether for social, economic, or ecological assessments, also is challenging because conditions vary naturally and that variability must be taken into account during any comparison of pre- and post-spill conditions. Collecting baseline data requires a commitment of effort and resources before accidents occur. If we fail to support the collection of such information, then following events like the Deepwater Horizon oil spill, we will continue to be left with sparse evidence of adverse effects but also with little confidence that serious effects would have been detected if they occurred. Such uncertainty does not provide a basis for responsible management of marine ecosystems. Therefore, the Marine Mammal Commission recommends that the Oil Spill Commission pay close attention to the quantity and quality of baseline population and health information on marine mammals, seabirds, turtles, and other wildlife in the Gulf of Mexico and, where it identifies shortcomings in that information, make recommendations for its improvement.

Research versus Review: One of the main concerns with regard to oil and gas operations is their potential adverse effect on the environment. In response to that concern, the leasing and production process includes multiple opportunities for environmental review. Those opportunities are necessary to ensure that the public has adequate opportunity to participate in the leasing process. However, the reviews do not necessarily guarantee that potential problems are identified or that decision-makers and the public are, in fact, well informed. Those objectives depend not only on the opportunity for review but also on the quantity and quality of available information. Rather than simply accepting the available information as sufficient, the Marine Mammal Commission believes that regulatory agencies ought to set standards that identify the information needed to assess the potential effects of a spill. Such standards might include the species present in an area; the status and trends of their populations; their health and physical condition; their habitat and the environmental conditions characteristic of that habitat; their sensitivity to spilled oil; our ability to protect them if a spill occurs; and their capacity for recovery after a spill. Without the information needed to meet such standards, the review process may accomplish the goal of involving all parties but cannot meet

the goal of ensuring that they are well informed. With that in mind, the Marine Mammal Commission recommends that the Oil Spill Commission examine the balance between collection of essential information and multiple review processes and consider whether information standards ought to be imposed to ensure that the environmental review process is not only transparent and accessible to the public but also adequately informed by the available information.

Efficacy of Response: From the moment a spill occurs, its ecological and socioeconomic significance is determined, in part, by the efficacy of the response. Regardless of how well coordinated the response effort was in the Deepwater Horizon case, virtually every response method used raised questions that could have been asked and answered before the spill. The response focused initially on the well-head and means to stop or reduce the flow of oil into the deep ocean. One can only conclude that, while BP was capable of drilling at a depth of 5,000 m, the company—and the industry in general—was not capable of responding efficiently to this kind of problem at that depth. Why had BP and regulators not anticipated the possibility of this kind of problem and developed suitable response measures beforehand? Attention then shifted to the use of dispersants at the wellhead and at the surface. This led to considerable debate regarding the wisdom of using potentially toxic dispersants at depth or in such volumes. Why had these questions not been anticipated and research conducted to address them beforehand? With regard to booms, videos of oil floating under them suggest that their shallow design was seriously flawed in terms of containing the kind of oil released in this spill. Why had they not been tested to determine how well they would contain this kind of oil or oil/dispersant mixture? The black smoke emanating from burning oil served as a reminder that combustion was incomplete, introducing extensive burn residue into the air and water. What do we know about that residue, its composition, and its toxicity? How long does it remain toxic and with what repercussions? Importantly, these and other pertinent questions could have been asked and answered beforehand if the industry and regulators were of a mindset to have been prepared for every eventuality. Although that seems like a tall order, when compared to the disruption caused to the Gulf society, economy, and marine environment—and when considered in the context of the annual profits of this single oil company—the costs of such preparations do not seem exorbitant. For all these reasons, the Marine Mammal Commission recommends that the Oil Spill Commission evaluate the nature, impacts, and efficacy of response methods and the apparent lack of preparation for addressing problems that could and should have been anticipated by the oil and gas industry and government regulators. Developing and testing better response measures may require procedures that are controversial (e.g., introducing oil-dispersant mixtures in the marine environment for research purposes), but the benefits of doing so may far outweigh the costs if response measures are not improved.

Cumulative Effects: As part of its environmental analyses, the Bureau of Ocean Energy Management, Regulation, and Enforcement must consider the impacts of oil and gas operations in the context of other human activities or the effects of those activities, including fisheries; commercial shipping; tourism; chemical contaminant and nutrient run-off from shore-based and inland industry, agriculture, and residential developments; military activities; and climate disruption, including such specific effects as changes in the incidence and magnitude of hypoxic zones and harmful algal blooms. Climate disruption, in particular, likely will alter the physical, biological, and

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chemical environment, perhaps dramatically, during the lifetime of any oil and gas development activity in this region. Perhaps the most extensive changes will be from rising sea level and the most abrupt effects from an increase in the frequency and severity of storms in the Gulf. Furthermore, the impacts of other human activities in this region likely will expand as the human population grows. The U.S. Census Bureau projects an increase of 19 million people in the five Gulf states by 2030, which will require increasing resources and impose increasing stress on the marine environment. Although the Oil Spill Commission likely cannot evaluate and address all the cumulative effects of human activities in the Gulf of Mexico, it should be mindful that oil and gas operations do not happen in isolation and must be managed in the context of many other activities that also may have significant impacts on the marine environment.

An International Perspective: Finally, the Marine Mammal Commission encourages the Oil Spill Commission to consider its recommendations from both a national and international perspective. Clearly, oil is an internationally traded and transported commodity and many of the major oil companies are international in scope. And, at the least, management of oil and gas operations around the world should be based on “best management practices.” That being the case, the Oil Spill Commission should develop its recommendations with the knowledge that they may have beneficial influence on oil and gas operations globally.

Again, the Marine Mammal Commission gratefully acknowledges the important work of the Oil Spill Commission. Please contact me if you have any questions regarding our recommendations or rationale or if we can provide any assistance.

Sincerely,

A handwritten signature in blue ink that reads "Timothy J. Ragen". The signature is written in a cursive style with a large, looped 'T' and 'R'.

Timothy J. Ragen, Ph.D.
Executive Director

Cc: Michael Bromwich, Esq.