



MARINE MAMMAL COMMISSION

24 January 2011

Mr. James Lima
Acting Regional Supervisor
Leasing and Environment
Bureau of Ocean Energy Management
3801 Centerpoint Drive, Suite 500
Anchorage, Alaska 99503

Dear Mr. Lima:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the Bureau of Ocean Energy Management's notice that it is preparing an environmental assessment for proposed seismic surveys in the Beaufort and Chukchi Seas in 2011. ION Geophysical Corporation will conduct the surveys, and one alternative is to conduct them from September to December, notably later in the year than previous seismic surveys in the Beaufort and Chukchi Seas. The proposed surveys pose risks to marine mammals, and the Commission offers the following recommendations and rationale to help the Bureau address them.

RECOMMENDATIONS

The Marine Mammal Commission recommends that the Bureau of Ocean Energy Management—

- expand its environmental analysis to include, at a minimum, an alternative that highlights other possible methods for gaining the required information and describes the levels of risk to marine mammals and other marine life associated with those methods;
- work with stakeholders to develop alternative survey strategies that avoid unnecessary redundancy in seismic studies in the Alaska Arctic and elsewhere;
- describe the limitations in existing baseline data for the September-to-December period and ensure that the resulting uncertainty is acknowledged and accounted for in the analysis of effects and the final decision-making process;
- analyze the benefits and costs of using visual observations and passive acoustics together to mitigate potential adverse effects and produce a more reliable estimate of the number of marine mammal takes resulting from the proposed survey;
- require the use of expanded safety zones as a precautionary measure;
- require ION Geophysical Corporation to (1) instruct its monitoring teams on the survey vessel to keep detailed records of each marine mammal sighting, the species involved, the location of the animal(s) relative to the vessels and array when first sighted (including distance and angle from the vessel's course), and the reaction of the animal(s) to the vessels and array; and (2) ensure analysis of that information to provide a more accurate assessment of the number of animals taken and the nature of their responses as a function of distance from the vessels and array and the level of exposure to airgun sounds;
- use its 2011 environmental assessment to describe the potential cumulative effects of the proposed activity and other human activities in the region, the information needed to assess

- those effects, the information that is presently available for that purpose, and the resulting uncertainty regarding those effects for all marine mammal species in the action area; and reconsider whether an environmental impact statement would be more useful and appropriate in this case.

RATIONALE

The Commission provides the following rationale for its recommendations.

Expand the Scope of the Alternatives

Guidance provided by the Council on Environmental Quality states that environmental documents “should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision-maker and the public.” The 2010 environmental assessment identified two action alternatives to collect seismic, gravity, and magnetic data needed to identify potential petroleum reserves. The preferred alternative (Alternative 1) involved a 2D (two-dimensional) survey in the Beaufort Sea and northeast portion of the Chukchi Sea from September through December 2010. Alternative 2 involved the same survey during the summer open-water period.

The Commission does not consider the two proposed alternatives sufficient to sharply define the issues regarding seismic surveys in the area of interest. The proposed alternatives are useful for evaluating the role of survey timing (i.e., season). An analysis of them should convey useful information about the efficacy of marine mammal monitoring during the open-water period versus the autumn and early winter when darkness, inclement weather, and ice are more prevalent. However, additional issues also warrant consideration. For example, an additional alternative should be included to analyze the methods that are proposed to gather the required data. Such an alternative could be used to evaluate whether the data might already exist in useful form, whether alternative means are available for data collection, or whether different seismic technology or configurations of the proposed technology might be used to reduce risks while still providing the essential data. Including such an alternative would help decision-makers understand the characteristics of the various methods that are available; their utility for different purposes, in different locations, and under different conditions; and the types and severity of risks involved, including risks to marine mammals, their habitat, and subsistence hunters. Therefore, the Marine Mammal Commission recommends that the Bureau of Ocean Energy Management expand its environmental analysis to include, at a minimum, an alternative that highlights other possible methods for gaining the required information and describes the levels of risk to marine mammals and other marine life associated with those methods.

Avoid Unnecessary Redundancy of Seismic Studies

At the Open Water Review Panel meeting in April 2010, panel members discussed the increasing number of geophysical surveys in the Beaufort and Chukchi Seas and whether essential

seismic information could be collected by a coordinated survey effort rather than by independent and sometimes duplicative efforts. Duplicative surveys may increase risks to marine mammals and marine ecosystems unnecessarily, with no meaningful gain in information. The Commission understands that the Outer Continental Shelf Lands Act requires the Bureau to promote economic competition, but it believes that can be done without causing excessive impact on the environment. The Marine Mammal Commission therefore concurs with the recommendation of the 2010 Open Water Review Panel that the Bureau of Ocean Energy Management work with stakeholders to develop alternative survey strategies that avoid unnecessary redundancy in seismic studies in the Alaska Arctic and elsewhere.

Describe Available Baseline Information, and the Lack Thereof, for the Affected Environment

Among other things, the description of the affected environment should include the baseline information needed to determine whether the proposed action—in this case, the proposed seismic survey—will have significant effects on the environment. Under the best circumstances, such information should include the distribution, abundance, trends, behavior, and habitat-use patterns of marine mammals, as well as their expected sensitivity and vulnerability to the proposed alternatives. To be clear, the Bureau and industry have collected a great deal of information about marine mammal distribution and effects of exploratory and development activities. However, most of that information pertains to the summer and early autumn (i.e., the open-water period). Perhaps that explains why the 2010 environmental assessment provided only limited information regarding the distribution and abundance of marine mammals expected to be in the proposed survey area between September and December. In essence, the growing wealth of information from summer months may not be a reliable indicator of potential effects in the late fall and early winter. Therefore, the Marine Mammal Commission recommends that the Bureau of Ocean Energy Management describe the limitations in existing baseline data for the September-to-December period and ensure that the resulting uncertainty is acknowledged and accounted for in the analysis of effects and the final decision-making process.

Improve Mitigation and Monitoring Measures

ION Geophysical Corporation proposes to conduct the survey from September to minimize effects on marine mammals and birds, as well as on subsistence hunts. The Commission commends the corporation for proposing this mitigation measure. That being said, the Commission remains concerned about the adequacy of the mitigation and monitoring plans. Reliance on visual monitoring is the most important shortcoming. Visual monitoring will be used to (1) determine if a marine mammal is present and it is unsafe to start the array or keep it operating and (2) estimate the total number of takes.

Even under good sighting conditions, visual observations will be limited in effectiveness. For example, some marine mammals may react to the vessels at distances too great to be detected. Marine mammals that do not move away at such distances may not be observed if they are below

the surface, and not all marine mammals that come to the surface will be detected. Poor sighting conditions will reduce further the effectiveness of visual monitoring. Inclement weather (e.g., fog), rough sea-surface conditions, or the presence of ice will lower significantly the probability of detecting marine mammals. So too will poor lighting conditions. Daylight in the area under consideration will diminish rapidly from September to mid-November, after which the sun will no longer rise above the horizon.

In 2010 the National Marine Fisheries Service convened an Open Water Review Panel to review applications for such surveys, and the panel raised the same concerns. It also noted that the lack of visibility likely increases the probability of Level A takes, as vessel operators may not be able to detect and respond to marine mammals in their path. The panel also noted that poor visibility may delay responses by the marine mammals to the vessels. Pinnipeds, for example, may be slow to detect the vessels and, depending on when they respond, they may inadvertently enter the waters within a safety zone, where they could be exposed to exceedingly high levels of sound.

Taken together, all these considerations raise serious questions regarding reliance on visual observation as the sole monitoring tool. To address these concerns, the Commission has recommended previously that seismic surveyors supplement visual monitoring with passive acoustic monitoring. This tool only works with animals that are making detectable sounds, and its value may be limited in the presence of sea ice. Still, the two tools together might enhance substantially the detection of marine mammals for mitigation purposes and for determining the number of takes during the survey. In addition, because this survey may require an icebreaker and a vessel pulling the array, the use of one or both of these methods from each vessel would provide a basis for assessing their detection capabilities. Assessing the efficacy of monitoring and mitigation measures should be an essential part of the Bureau's management strategy for seismic surveys. For all these reasons, the Marine Mammal Commission recommends that the Bureau of Ocean Energy Management analyze the benefits and costs of using visual observations and passive acoustics together to mitigate potential adverse effects and produce a more reliable estimate of the number of marine mammal takes resulting from the proposed survey. As is always the case, the results of such analyses should include a description of the uncertainties involved, which is essential information for decision-makers and the public.

More Accurately Depict the Number and Nature of Takes

The purpose of monitoring is to determine if the total effect of the incidental taking is negligible. Given the uncertainty involved, the usual approach is to distinguish effects on the basis of the number of individuals to be taken and the significance of the take to them (i.e., those that may lead to behavioral responses only versus those that have the potential to cause serious injury or death). In general, the potential for those two types of effect are judged on the basis of distance from the airgun array and the intensity of the sound exposure. That distance is used to outline a safety zone around the array and the standard practice is to infer that the level of risk shifts from a behavioral response outside the zone to possible harm inside the zone. Such a clear distinction is probably not realistic because the nature of the response also is a function of the animal involved.

Because of the uncertainty as to how marine mammals might respond at varying distances from the airgun array and vessels, the Marine Mammal Commission recommends that the Bureau of Ocean Energy Management require the use of expanded safety zones as a precautionary measure.

In addition, the Marine Mammal Commission recommends that, if this survey is to be undertaken, the Bureau of Ocean Energy Management require ION Geophysical Corporation to (1) instruct its monitoring teams on the survey vessel to keep detailed records of each marine mammal sighting, the species involved, the location of the animal(s) relative to the vessels and array when first sighted (including distance and angle from the vessel's course), and the reaction of the animal(s) to the vessels and array; and (2) ensure analysis of that information to provide a more accurate assessment of the number of animals taken and the nature of their responses as a function of distance from the vessels and array and the level of exposure to airgun sounds. For any given survey, such data can be used to improve the estimate of the total number of animals taken and to characterize their responses to the vessels, array and sound exposure levels. Furthermore, if all surveys collected such data, the combined information could provide a substantial basis for improving monitoring and mitigation efforts, which would be helpful to all, including the industry, regulators, and conservationists.

Assess Cumulative Effects

The cumulative effects of a proposed action, combined with the effects of other activities in the same area, generally are the most difficult to characterize and mitigate. The 2010 environmental assessment notes that “[t]he potential cumulative adverse effects of long-term added noise, disturbance, and related avoidance of feeding and resting habitat from all sources of disturbance in an extremely long-lived species such as the bowhead whale are unknown.” It also notes that “sublethal impacts (such as reduced hearing or increased stress) could occur.” The environmental assessment concluded, however, that the proposed action likely would result in a negligible impact on bowhead whales. The Commission has difficulty reconciling these statements because of the uncertainty regarding cumulative effects and the limitations of mitigation measures intended to protect bowhead whales. The Commission also believes that a careful analysis of potential cumulative effects is necessary to protect all marine mammals in the action area. For these reasons, the Marine Mammal Commission recommends that the Bureau of Ocean Energy Management use its 2011 environmental assessment to describe the potential cumulative effects of the proposed activity and other human activities in the region, the information needed to assess those effects, the information that is presently available for that purpose, and the resulting uncertainty regarding those effects for all the species in the action area. Doing so will not only inform decision-makers and the public to the best of the Bureau's ability but also will provide guidance for future studies to reduce the uncertainty regarding cumulative effects.

Significant Federal Actions and the Need for Greater Public Involvement

The National Environmental Policy Act requires that environmental impact statements be prepared for major federal actions that may significantly affect the quality of the human

environment (42 U.S.C. 4371 *et seq.*). The Council on Environmental Quality's regulations implementing the National Environmental Policy Act require that significance consider both context and intensity (40 CFR §1508.27). In determining the intensity of an action, the regulations direct agencies to consider, among other things—

- unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas;
- the degree to which the effects on the quality of the human environment are likely to be highly controversial;
- the degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks;
- the degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration;
- whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment; and
- the degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

One can make reasonable arguments that all of these criteria apply in the present case. The seismic survey is proposed for an Arctic area that is unique in the U.S. marine domain. It serves no other purpose than to facilitate oil and gas development in the Arctic, which has generated major controversy. The controversy is based, in part, on uncertainty regarding the effects of seismic studies, which are integral to most phases of oil and gas development and operation. Because it has been proposed for a season later than preceding surveys, it has the potential to establish a precedent. Although a single survey may not have significant environmental effects, the combined total of oil and gas operations poses considerable cumulative risk to the environment. And the survey may affect a number of species that are either listed under the Endangered Species Act or are under consideration for listing.

All of these points argue for a careful, thoughtful approach to oil and gas development in this area, including the execution of seismic studies. Given the uncertainty involved, the Commission believes it is critical that the process involved allows ample opportunity to both inform the public and seek public input. Because the proposed survey is in the Arctic and may occur during a period when scientific research has been limited, it seems particularly important to solicit and consider input from Alaska Natives who are familiar with and depend on the resources of that area.

Given all these points, the Marine Mammal Commission recommends that the Bureau of Ocean Energy Management reconsider whether an environmental impact statement would be more useful and appropriate in this case. Environmental assessments are generally intended to determine whether an action may have a significant impact on the human environment. Given the circumstances surrounding this proposed survey, it would be difficult to rule out the possibility of a significant impact.

Mr. James Lima
24 January 2011
Page 7

The Commission hopes that you find these recommendations and comments helpful. Please contact me if you have questions or if the Commission can be of assistance as you consider these matters.

Sincerely,

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

Timothy J. Ragen, Ph.D.
Executive Director