



# MARINE MAMMAL COMMISSION

24 May 2010

Mr. P. Michael Payne, Chief  
Permits, Conservation, and Education Division  
Office of Protected Resources  
National Marine Fisheries Service  
1315 East-West Highway  
Silver Spring, Maryland 20910-3226

Dear Mr. Payne:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the application from Shell Offshore, Inc., under section 101(a)(5)(D) of the Marine Mammal Protection Act. The applicant is seeking authorization to take small numbers of three cetacean species (beluga, bowhead, and gray whales) and three pinniped species (ringed, spotted, and bearded seals) by harassment incidental to open-water offshore exploratory drilling at the Torpedo and Sivulliq prospects in Camden Bay, Beaufort Sea, Alaska, during the 2010 Arctic open-water season. The Commission also has reviewed the National Marine Fisheries Service's 19 April 2010 *Federal Register* notice (75 Fed. Reg. 20481) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

## RECOMMENDATIONS

The Marine Mammal Commission recommends that the National Marine Fisheries Service—

- issue the requested incidental harassment authorization contingent upon the successful negotiation of a conflict avoidance agreement between Shell and the Alaska Eskimo Whaling Commission and affected whaling captains associations;
- facilitate development of more comprehensive conflict avoidance agreements that involve other potentially affected communities and take into account potential adverse effects on all species taken for subsistence purposes including, but not limited to, bowhead whales;
- require Shell to suspend operations immediately if a dead or seriously injured marine mammal is found in the vicinity of the operations and the death or injury could be attributable to the applicant's activities. Any suspension should remain in place until the Service has reviewed the situation and determined that further deaths or serious injuries are unlikely or has issued regulations authorizing such takes under section 101(a)(5)(A) of the Act;
- revise its assessment of expected takes associated with the proposed activity by evaluating all aspects of Shell's operations, whether directly involved in drilling or indirectly related to providing operational support;
- take a lead role pursuing the objectives set forth in the expert panel review associated with the open-water meeting to improving ecosystem assessments and assessments of the cumulative effects of oil and gas operations;

- develop and employ means for tracking and enforcing Shell's implementation of monitoring and mitigation measures to ensure that they are executed as expected; and
- include in its environmental assessment for this project a thorough analysis of (1) the potential for an oil spill, including a worse-case scenario, during the proposed exploratory drilling activities, and (2) the ability of Shell to respond to such a spill, including contingency plans in the event that the drillship, *Frontier Discoverer*, is disabled or sunk.

## **RATIONALE**

Issuance of the requested authorization hinges largely on whether the operations (1) have an unmitigable adverse effect on the availability of marine mammals for subsistence purposes and (2) affect more than a small number of marine mammals or have more than a negligible effect on their populations. The Service states that the primary means of taking marine mammals during the proposed exploratory drilling operations would be by disturbance from drilling sounds and secondary sources of noise from drilling and support vessels, including ice management vessels, oil spill response vessels, and aircraft. As described in this letter, taking all these activities into account is necessary to provide a full assessment of the potential effects of exploratory drilling on the availability of marine mammals for subsistence and on the populations themselves.

### **Availability of Marine Mammals for Subsistence**

With regard to the availability of marine mammals for subsistence purposes, Shell has developed a draft plan of cooperation for the 2010 Camden Bay exploratory drilling program to minimize effects on subsistence harvests. The plan establishes the time and location of drilling activities to avoid interference with the annual fall bowhead whale hunts from Kaktovik, Nuiqsut, and Barrow. It also establishes transit routes and times to avoid other subsistence use areas, and it calls for communication with other coastal communities before operating in or passing through those areas. In addition, Shell plans to hold consultation meetings with the affected communities and subsistence user groups to discuss the mitigation measures included in the plan.

Shell also is reviewing the draft 2010 conflict avoidance agreement with the Alaska Eskimo Whaling Commission and the various whaling captains associations and is expected to make a decision as to whether it will sign the agreement prior to commencing operations in 2010. Shell is not required to sign the agreement to obtain an incidental harassment authorization, but such agreements often contain measures that help the Service make determinations of no unmitigable adverse impact. In this particular case, the Service already has made a preliminary determination that the proposed operation will not have an unmitigable adverse impact on subsistence uses. It based this determination on the measures described in Shell's draft plan of cooperation, the proposed mitigation and monitoring measures, and the project design.

Shell should be acknowledged for taking the steps just described to avoid unacceptable effects on the availability of marine mammals for subsistence purposes. However, it is not yet clear that those steps are sufficient. For example, do Shell's consultations with Alaska Native

communities resolve the hunters' concerns? Similarly, negotiating and reaching consensus on a conflict avoidance agreement related to bowhead whales is useful but also leads to the question as to why such agreements should not be prepared for subsistence hunters taking other species if Shell's activities might affect the availability of those species. Thus, the Commission believes that a determination of no unmitigable adverse impact on the availability of marine mammals for subsistence uses should be based, in part, on concurrence of those people who are the experts regarding the availability of marine mammals for subsistence harvests—the potentially affected Alaska Natives. With that in mind, the Marine Mammal Commission recommends that the National Marine Fisheries Service issue the requested incidental harassment authorization contingent upon the successful negotiation of a conflict avoidance agreement between Shell and the Alaska Eskimo Whaling Commission and affected whaling captains associations. Such an agreement should help promote cooperation and communication among the parties involved and minimize potential conflicts between industry activity and bowhead whale subsistence hunts. Similarly, the Marine Mammal Commission recommends that the National Marine Fisheries Service facilitate development of more comprehensive conflict avoidance agreements that involve other potentially affected communities and take into account potential adverse effects on all species taken for subsistence purposes including, but not limited to, bowhead whales.

### **Effects on Marine Mammal Populations**

The potential effects on marine mammals from exploratory drilling and related support operations range from small changes in behavior (e.g., temporary modification of diving patterns) to larger shifts in distribution and habitat use and, under certain conditions, physical injury or death (e.g., from ship strikes). Because Shell has chosen to apply for an incidental authorization under section 101(a)(5)(D) of the Act, the authorization, if granted, cannot include allowances for serious injuries or deaths. With that limitation in mind, the Marine Mammal Commission recommends that the National Marine Fisheries Service require Shell to suspend operations immediately if a dead or seriously injured marine mammal is found in the vicinity of the operations and the death or injury could be attributable to the applicant's activities. Any suspension should remain in place until the Service has reviewed the situation and determined that further deaths or serious injuries are unlikely or has issued regulations authorizing such takes under section 101(a)(5)(A) of the Act.

The information in the *Federal Register* notice indicates that the Service may have limited its analysis to drilling-related noises and dismissed a number of effects that may arise from support activities. For example, on page 20484, the notice states that “crew change and resupply activities are considered part of normal vessel traffic and are not anticipated to impact marine mammals in a manner that would rise to the level of taking.” The Commission disagrees with this conclusion. Once the drilling vessel and associated vessels (e.g., spill response vessels) are in place, most of the vessel activity in the region likely will involve crew change and resupply vessels. These vessels may make frequent trips and may travel at relatively high speeds in areas where bowheads and other marine mammals occur. The vessels may disturb those marine mammals, will introduce additional noise into the marine environment, and will pose a risk of ship strikes. To dismiss the operations of these vessels as normal vessel traffic unreasonably discounts such added risks. Similarly, the Service preliminarily concludes that “ice-management activities are not anticipated to impact marine

mammals in a manner that would rise to the level of taking.” Here, too, the Commission disagrees. Previous research in the Arctic provides ample evidence that ships, and especially icebreakers, introduce large amounts of sound into the ocean that may cause bowhead whales and other marine mammals to alter their behavior. Finally, the Service’s preliminary determination does not appear to take into account the risks associated with the drilling process itself. For example, the drilling process discharges a variety of material into the marine environment (e.g., drilling muds and cuttings, cooling water), and the Service’s analysis does not appear to have accounted for the potential effects of such discharges. If, in fact, the Service’s preliminary decision is based almost entirely on the sounds from the drillship, then the full potential for taking marine mammals likely will be underestimated. To address this concern, the Marine Mammal Commission recommends that the National Marine Fisheries Service revise its assessment of expected takes associated with the proposed activity by evaluating all aspects of Shell’s operations, whether directly involved in drilling or indirectly related to providing operational support.

### **Cumulative Effects on Marine Mammal Populations**

Judging whether or not the effects of the proposed activities will be negligible requires taking into account the full range of factors that may already be affecting the species and stocks in this region. Wildlife populations do not consist just of healthy, resilient animals. They also include animals that are compromised by injuries, disease, or parasitism; females that are stressed physiologically by the energetic demands of carrying a fetus or nursing a calf; and calves that are in the most vulnerable stage of their life history, being at first entirely dependent on their mother for nutrition and protection and then making the transition to nutritional independence. For such individuals, the effects of one drilling operation might be tolerable if that were the only risk factor to which they were exposed. However, the populations under consideration are exposed to other human activities (e.g., seismic testing at various locations in the Beaufort and Chukchi Seas, seasonal barge and vessel traffic, hunting, and disturbances from several already established oil and gas operations). They also are experiencing the consequences of climate change, although it is too early to tell whether the effects of Arctic warming will be positive or negative for some species, including gray and bowhead whales.

As noted in the expert panel report completed in association with the open-water meeting, the Service needs to address, as fully as possible, the cumulative effects of multiple human-related activities on the marine mammals that may be affected by the proposed operations. The panel described a number of basic tasks that the industry, federal agencies, Alaska Native organizations, conservation organizations, and other interested parties could undertake to promote more comprehensive ecosystem assessments. These include, but are not limited to—

- Emphasizing multidisciplinary studies that integrate physical, chemical, and biological measurements to assess human influences throughout marine ecosystems;
- Incorporating data collected using all reliable methods and from all pertinent sources, including broad ecosystem studies, more narrowly targeted research, and other activities (e.g., commercial, military) that may have ecosystem effects. These data streams should be

- integrated spatially and temporally to provide a more comprehensive assessment of the ecosystem;
- Archiving all collected data in standardized databases for sharing among scientific disciplines;
- Maintaining and making available detailed logs of all activities in the Beaufort and Chukchi area (e.g., oil and gas, shipping, fishing, scientific cruises, use of ice breakers);
- Developing and implementing policies and means for sharing data and ensuring that the research community has access to the information needed to conduct more integrated, comprehensive ecosystem assessments;
- Developing better and more timely methods for integrating and displaying combined datasets spatially and temporally;
- Including data on location and timing of subsistence hunts;
- Monitoring developments in other regions or scientific disciplines that may reveal better ways of integrating and analyzing multiple datasets or conducting cumulative effects or comprehensive ecosystem analyses; and
- Including pertinent biological information on the status, ecology, and behavior of the potentially affected species or stocks (e.g., contaminant load, body condition, reproduction, distribution, and relative abundance).

The Commission concurs that these tasks would promote better ecosystem assessment as well as assessment of the cumulative effects of oil and gas operations. Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries take a lead role pursuing these tasks for the purpose of improving ecosystem assessments and assessments of the cumulative effects of oil and gas operations. Doing so will take cooperation with all involved parties and will require time to implement, but each of the listed actions should enhance the Service's ability to fulfill its regulatory role regarding such effects.

### **Monitoring, Mitigation, and Enforcement**

The *Federal Register* notice states that Shell's marine mammal monitoring and mitigation plan incorporates both design features and operational procedures for minimizing potential impacts on marine mammals. Those include pre-season sound propagation modeling to establish the appropriate safety and behavioral radii; reducing vessel speed and/or changing course to avoid coming close to sighted marine mammals; resuming full activity only after marine mammals are confirmed to be outside the safety zone; and prohibiting aircraft from flying below an altitude of 1,500 feet. The Service states that it intends to require additional mitigation measures to "ensure the least practicable impact on the affected species or stocks." Measures under consideration include reducing vessel speed within 300 yards of whales; avoiding multiple changes in vessel direction and speed within 300 yards of whales; reducing speed and changing operating procedures in inclement weather; avoiding drilling operations during the bowhead migration and subsistence hunting periods; using vessel and aerial monitoring to look for concentrations of bowhead whales and migrating bowhead whale cow/calf pairs; and temporarily interrupting operations when such groups are

sighted and appear to be responding to drilling operations. The Marine Mammal Commission fully supports the implementation of such measures.

With regard to monitoring and mitigation requirements, visual monitoring—whether from aircraft or vessels—can be woefully inadequate under certain conditions, and reliance on visual monitoring does not give confidence that potentially important effects on marine mammals will be detected. The Commission has written extensively about the need to better characterize the effectiveness of these measures, not necessarily for the purpose of discontinuing them if they provide some benefit, but more for giving managers and decision-makers a more realistic appraisal of the efficacy of such measures and the need to improve them. Because it is responsible for issuing incidental harassment authorizations under the Marine Mammal Protection Act, and because it often must do so on the basis of monitoring and mitigation measures of uncertain utility or efficacy, the Service is frequently in the position of having to decide whether to approve or disapprove a proposed activity based on incomplete information. Here, too, the expert panel report associated with the open-water meeting provided a number of suggestions for improving monitoring and mitigation during the course of Shell's exploratory drilling in Camden Bay. The Marine Mammal Commission concurs with those recommendations and also recommends that the National Marine Fisheries Service incorporate them into the authorization, if issued.

However, requirements for certain monitoring and mitigation measures will mean little if the parties involved fail to implement them. In this case, Shell likely will be working under a tight schedule determined in part by seasonal changes in weather and, particularly, ice conditions. Although the company may recognize monitoring and mitigation measures as important, it may not deem such measures to be the highest priority if they conflict with operations considered essential to drilling progress. Under such conditions, monitoring and mitigation measures may not be put into practice as intended and their value may be compromised. To avoid such situations, the Marine Mammal Commission recommends that the National Marine Fisheries Service develop and employ means for tracking and enforcing Shell's implementation of monitoring and mitigation measures to ensure that they are executed as expected.

### **Worst-case Scenario**

Finally, the National Marine Fisheries Service's *Federal Register* notice, Shell's application, and the Minerals Management Service's environmental assessment of the proposed activities all discount the potential for a large oil spill occurring during the proposed exploratory drilling activities. In its environmental assessment regarding Shell's 2010 Outer Continental Shelf Lease Exploration Plan for Beaufort Sea Leases Camden Bay, Alaska, OCS-Y-1805 and 1941, the Minerals Management Service states that, "[f]or purposes of Shell's proposed exploration drilling program during the 2010 open-water season, OCS historical crude and condensate spill data demonstrates that a large spill is too remote and speculative an occurrence to be considered a reasonably foreseeable occurrence of Shell's proposed exploration project.... A very large oil spill [ $\geq 150,000$  bbl] from a well-control incident during OCS exploratory drilling is a similarly unlikely occurrence.... A very large spill from a well-control incident is not a reasonably foreseeable event in connection with the exploration

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activities set forth in Shell's EP [Exploration Plan], and therefore, this EA does not analyze the impacts of such a worst-case scenario."

On 30 March 2009 the Marine Mammal Commission wrote to the Minerals Management Service (letter enclosed) regarding lease sales in the Beaufort and Chukchi Seas. Among other things, the Commission recommended that the Minerals Management Service revise its draft environmental impact statement by "expanding its tables of impact to include worst-case scenarios, the probability of their occurrence, and the potential consequences should they occur." This notion that unlikely events need not be considered because of the small probability that they will occur runs counter to standard risk analysis. Such analysis defines risk not simply as a function of probability of occurrence but also in terms of the consequences if a worst-case scenario occurs.

Considering the recent blowout of the *Deepwater Horizon* oil rig in the Gulf of Mexico and the potentially devastating ecological impacts from the associated oil spill, the Commission considers it essential that the Minerals Management Service and the National Marine Fisheries Service conduct a thorough analysis of not only the likelihood of a spill, but the potential consequences if a spill should occur. Such analysis is particularly important given the adverse weather conditions, presence of sea ice, and major logistics challenges to exploratory drilling and oil spill response efforts in the Arctic environment, and the potential for severe adverse impacts to the fragile Arctic ecosystem and Alaska native subsistence hunting. What is the risk that Shell will experience a failure similar to that in the Gulf? How long would it take to drill a relief well if the *Frontier Discoverer* were disabled? Would response efforts be brought to a halt by advancing winter conditions? These seem reasonable questions that warrant consideration by the National Marine Fisheries Service. The Service's *Federal Register* notice states that it is currently preparing an environmental assessment to determine whether or not this proposed activity may have a significant effect on the human environment. The purpose of that assessment is to inform decision-makers regarding such concerns. With that in mind, the Marine Mammal Commission recommends that, in preparing the environmental assessment, the National Marine Fisheries Service conduct a thorough analysis of (1) the potential for an oil spill, including a worse-case scenario, during the proposed exploratory drilling activities, and (2) the ability of Shell to respond to such a spill, including contingency plans in the event that the drillship, *Frontier Discoverer*, is disabled or sunk.

Please contact me if you have questions regarding these recommendations.

Sincerely,



Timothy J. Ragen, Ph.D.  
Executive Director

Enclosure

cc: Liz Birnbaum, Minerals Management Service