

Marine Mammal Commission
4340 East-West Highway, Room 905
Bethesda, MD 20814

6 July 2009

Mr. P. Michael Payne, Chief
Permits, Conservation, and Education Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

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., and Shell Gulf of Mexico, Inc., for an incidental harassment authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act. The applicant is seeking authorization to take by harassment small numbers of marine mammals incidental to conducting seismic surveys in the Chukchi Sea during open-water seasons between August 2009 and July 2010. The potentially affected species are bowhead, fin, gray, humpback, minke, killer, and beluga whales, harbor porpoises, and ringed, spotted, bearded, and ribbon seals. The Commission also has reviewed the National Marine Fisheries Service's 1 June 2009 *Federal Register* notice (74 Fed. Reg. 26217) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions. Based on its review of these documents, the Commission offers the following recommendations and rationale.

RECOMMENDATIONS

With respect to the requested incidental harassment authorization, the Marine Mammal Commission recommends that the National Marine Fisheries Service—

- require Shell to describe in detail how it adjusted the data in Moore et al. (2000) to estimate cetacean densities in the Chukchi Sea in the fall;
- require Shell and other applicants to develop and implement a biologically realistic study design for estimating take levels;
- prior to issuing the requested incidental harassment authorization, establish explicit and specific mitigation measures for bowhead and beluga whales that will ensure that the proposed activities do not affect these species in ways that will make them less available to subsistence hunters. Such measures should (1) reflect the provisions of any conflict avoidance agreements between Alaska Native hunters and the applicant and (2) meet the requirements of the Marine Mammal Protection Act;
- require the applicant to undertake the studies needed to verify observer proficiency (including the number of observers needed to monitor entire safety zones and the presence of marine mammals near or within those zones, particularly when operations are being conducted 24 hours a day) and provide additional rationale for allowing seismic surveys to continue under nighttime conditions when observer proficiency is severely compromised. In addition, the Service should require that the applicant supplement its mitigation measures by using passive acoustic monitoring. Such monitoring will enhance marine mammal detection

capabilities under all conditions, but particularly at night and when visibility is otherwise poor. The Service also should require the same of other applicants conducting seismic work in the Arctic;

- require the applicant to collect and analyze data pertaining to the efficacy of ramp-up as a mitigation measure. The Service also should require this of other applicants proposing to use ramp-up procedures during the conduct of seismic and other acoustic studies; and
- require that operations be suspended immediately if a dead or seriously injured marine mammal is found in the vicinity of the operations and the death or injury might be attributable to the applicant's activities. Any suspension should remain in place until the Service (1) has reviewed the situation and determined that further deaths or serious injuries are unlikely to occur or (2) has issued regulations authorizing such takes under section 101(a)(5)(A) of the Marine Mammal Protection Act.

With regard to the possible cumulative effects of the proposed activity and other industrial activities in the Arctic, the Marine Mammal Commission recommends that the National Marine Fisheries Service—

- conduct a more extensive analysis of the potential or likely effects of currently authorized and proposed oil and gas activities, climate change, and additional anthropogenic risk factors (e.g., industrial operations) and the possible cumulative effects of all of these activities over time;
- together with the applicant, other holders of incidental harassment authorizations for work in the Arctic, and appropriate agencies and organizations develop a comprehensive population monitoring and impact assessment program to assess whether these activities, in combination with other risk factors, are (1) individually or cumulatively having any significant adverse population-level effects on marine mammals or (2) having an unmitigable adverse effect on the availability of marine mammals for subsistence use by Alaska Natives. Such a monitoring program should focus initially on the need to collect adequate baseline information to allow for future analyses of effects; and
- sponsor a workshop or workshops to facilitate the development of a comprehensive population monitoring and impact assessment program. As noted in our previous letters, the Commission would be willing to co-sponsor such a workshop with the Service.

RATIONALE

Background

The Service issued an incidental harassment authorization to Shell on 20 August 2008 to take marine mammals during seismic surveys in the Beaufort and Chukchi Seas during portions of the 2008 and 2009 Arctic open-water seasons. Shell is seeking authorization to continue a portion of those activities (i.e., site clearance and shallow hazards and strudel scour surveys) during the 2009 and 2010 open-water seasons in the Chukchi Sea. The company has cancelled its 2009–2010 planned

ice gouge survey in the Chukchi Sea. It also has cancelled its entire planned 2009–2010 marine seismic survey program in the Beaufort Sea.

The Service has preliminarily determined that the impact of conducting the proposed site clearance and shallow hazards and strudel scour surveys in the Chukchi Sea during the 2009 and 2010 open-water seasons will (1) result only in the temporary modification in behavior of small numbers of 12 species of marine mammals, (2) have no more than a negligible impact on the affected marine mammal species or stocks, and (3) have no unmitigable adverse impact on the availability of marine mammal species or stocks for subsistence use. The Service bases these determinations on the information provided in several documents, including the application from Shell Offshore, Inc.; Shell's responses to the Service's request for supplemental information regarding the proposed activities; the final report of the Joint Monitoring Program in the Chukchi and Beaufort Seas, Open Water Seasons, 2006–2007 (Ireland et al. 2009); and the preliminary draft report of the Joint Monitoring Program in the Chukchi and Beaufort Seas, open water seasons, 2006–2008. The last of these provides data and analyses from a number of industry monitoring and research studies carried out in the Chukchi and Beaufort Seas during in 2008.

Estimating cetacean density

Shell's application indicates that the company relied on Moore et al. (2000) to estimate fall (September–October) densities of bowhead whales, beluga whales, and gray whales in the Chukchi Sea area. However, a review of the Moore et al. paper reveals that the authors provide density estimates only for the gray whale in the Chukchi Sea, and those data apply to the summer period. Thus, Shell must have adjusted the data in Moore et al. (2000) to estimate densities for these species, but the adjustments are not described and thus are not possible to evaluate. Therefore, the Marine Mammal Commission recommends that the Service require Shell to describe in detail how it adjusted the data in Moore et al. (2000) to estimate cetacean densities in the Chukchi Sea in the fall.

Estimating take levels

The applicant will base estimates of the minimum number of marine mammals taken by harassment on the numbers of animals directly seen within the relevant safety radii by observers on the source vessel or on nearby support vessels during survey activities. The Commission is concerned that this method of estimation may be misleading because (1) the minimum estimate will depend on the portion of time observers are on duty (e.g., operations or observations at night may not be included), (2) it does not account for observer sighting proficiency (e.g., the ability to sight cetaceans versus pinnipeds), and (3) it does not account for behavioral responses of animals outside the so-called safety zones. The applicant's maximum take estimate is likewise problematic because it fails to take into account the movement patterns of these species, which could greatly bias maximum estimates of take by harassment. Absent reasonable corrections for these factors, the minimum and maximum estimates may be potentially useless or misleading, with potentially adverse consequences. The Marine Mammal Commission therefore recommends that the Service require Shell and other applicants to develop and implement a biologically realistic study design for estimating take levels.

Potential impacts on subsistence hunting

The Service's *Federal Register* notice states that Shell's proposed spatial and temporal operational strategy for its Chukchi Sea operations should minimize impacts on subsistence hunters (e.g., Shell will begin operations after the close of the spring bowhead hunt and will closely coordinate with subsistence advisors to avoid impacts on beluga whale and walrus hunts). The Service also states that the timing (late summer and fall) of the proposed surveys and their distance from shore (113 km, or 70 mi), as well as the low-volume airguns that are proposed to be used and the proposed mitigation measures, are expected to mitigate any adverse effects of the surveys on the availability of marine mammals for subsistence uses. Further, the notice states that Shell has (1) prepared and will implement a draft plan of cooperation for its proposed 2009 activities to mitigate and avoid any unreasonable interference of the planned activities with North Slope subsistence uses and resources; (2) met with and will continue to meet with the affected communities and organizations, including the Alaska Eskimo Whaling Commission, Eskimo Walrus Commission, Alaska Beluga Whale Committee, Alaska Ice Seal Committee, and the Alaska Nanuq Commission, throughout 2009 to avoid potential conflicts; and (3) begun preparing additional mitigation measures to avoid potential conflicts. The Marine Mammal Commission supports these efforts but recommends that issuance of the requested incidental harassment authorization be contingent on the Service establishing explicit and specific mitigation measures for bowhead and beluga whales that will ensure that the proposed activities do not affect these species in ways that will make them less available to subsistence hunters. Such measures should (1) reflect the provisions of any conflict avoidance agreements between Alaska Native hunters and the applicant and (2) meet the requirements of the Marine Mammal Protection Act.

Monitoring and mitigation

The Commission notes that the Service is proposing to include in the incidental harassment authorization the additional mitigation and monitoring measures that were included in authorizations issued to Shell Offshore in 2006, 2007, and 2008. The Marine Mammal Commission supports these proposed mitigation and monitoring measures and recommends that they be incorporated in the incidental harassment authorization, if issued. However, the Commission continues to believe that the Service and the industry are overestimating the performance and utility of various monitoring and mitigation strategies. The performance of these strategies has not been tested and validated. The Commission believes that, absent an evaluation by the oil and gas industry of its monitoring and mitigation measures, the effects of the industry's activities will remain uncertain. The Marine Mammal Commission therefore recommends that the Service require Shell and other companies conducting seismic work in the Arctic to undertake the studies needed to verify observer proficiency (including the number of observers needed to monitor entire safety zones and the presence of marine mammals near or within those zones, particularly when operations are being conducted 24 hours a day) and provide additional rationale for allowing seismic surveys to continue under nighttime conditions when observer proficiency is severely compromised. The Marine Mammal Commission also recommends that the applicant be required to supplement its mitigation measures by using passive acoustic monitoring. Such monitoring will enhance marine

mammal detection capabilities under all conditions, but particularly at night and when visibility is otherwise poor.

As a related matter, the Commission cannot determine from the information provided in the application whether Shell plans to collect data during ramp-up procedures to test the assumption that animals are able to, and will, move away from an increasingly loud noise to avoid harmful effects. The Marine Mammal Commission reiterates its recommendation that the Service require Shell and other applicants using ramp-up procedures to collect and analyze data pertaining to the efficacy of ramp-up as a mitigation measure.

Lethal Taking and Serious Injury

In addition, the Marine Mammal Commission recommends that the incidental harassment authorization, if issued, require that operations be suspended immediately if a dead or seriously injured marine mammal is found in the vicinity of the operations and if that death or injury could be attributable to the applicant's activities. Any suspension should remain in place until the Service (1) has reviewed the situation and determined that further deaths or serious injuries are unlikely to occur or (2) has issued regulations authorizing such takes under section 101(a)(5)(A) of the Marine Mammal Protection Act.

Cumulative impacts

As stated in its letters to the Service regarding previous applications to conduct similar activities in the Chukchi Sea during the Arctic open-water season, the Commission continues to be concerned about the potential cumulative impacts of climate-related ecosystem changes occurring in the Arctic and the anticipated increase in the level of seismic and other oil and gas-related activities in the region.

According to the Service's *Federal Register* notice and Shell's proposed marine mammal monitoring and mitigation plan, Shell intends to prepare a comprehensive report following the 2009 open-water season that describes and analyzes its acoustic and vessel-based monitoring programs. The Service and Shell state that the report will, to the extent possible, integrate the results into a broad-based assessment of industry activities and their impacts on marine mammals in the Chukchi Sea during 2009, although Shell notes that "to truly capture 'cumulative' effects of offshore activities would involve collecting data on operations supporting North Slope Borough villages, research vessels, and other activities occurring in the Chukchi Sea." Shell suggests that data from the comprehensive report could be presented and discussed at a workshop on cumulative effects associated with offshore activities if such a workshop could be organized. It notes that such a forum "would provide an opportunity for all stakeholders to engage in the development of a cumulative effects strategy for future activities."

The Commission concurs with Shell's points concerning the various sources of data needed to adequately assess the potential cumulative effects of oil and gas-related activities in the Chukchi Sea. The Commission also concurs with Shell's suggestion that a workshop would be useful to

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facilitate the development of a cumulative effects strategy. The Marine Mammal Commission reiterates its recommendation that the Service conduct a more extensive analysis of the potential or likely effects of currently authorized and proposed oil and gas activities, climate change, and additional anthropogenic risk factors (e.g., industrial operations) and the possible cumulative effects of all of these activities over time. The Marine Mammal Commission also recommends that the Service, together with the applicant, other holders of incidental harassment authorizations for seismic work in the Arctic, and appropriate agencies and organizations, develop a comprehensive population monitoring and impact assessment program to assess whether these activities, in combination with other risk factors, are (1) individually or cumulatively having any significant adverse population-level effects on marine mammals or (2) having an unmitigable adverse effect on the availability of marine mammals for subsistence use by Alaska Natives. Such a monitoring program should focus initially on the need to collect adequate baseline information to allow for future analyses of effects. Finally, the Marine Mammal Commission recommends that the Service sponsor a workshop or workshops to facilitate the development of a comprehensive population monitoring and impact assessment program. As noted in our previous letters, the Commission would be willing to co-sponsor such a workshop with the Service.

Please contact me if you or your staff has questions about these comments and recommendations.

Sincerely,



Timothy J. Ragen, Ph.D.
Executive Director

Literature Cited

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