



MARINE MAMMAL COMMISSION

19 May 2014

Ms. Jolie Harrison, Supervisor
Incidental Take Program
Permits and Conservation Division
National Marine Fisheries Service
Office of Protected Resources
1315 East-West Highway
Silver Spring, MD 20910

Dear Ms. Harrison:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the December 2013 application from BP Exploration (Alaska), Inc. (BP), seeking an incidental harassment authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act to take small numbers of marine mammals by harassment incidental to a three-dimensional (3D) seismic survey in North Prudhoe Bay, Beaufort Sea, Alaska during the 2014 Arctic open-water season. The Commission has also reviewed the National Marine Fisheries Service's (NMFS) 15 May 2014 notice (79 Fed. Reg. 21354) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

BACKGROUND

BP proposes to conduct a 3D ocean-bottom sensor (OBS) seismic survey in Prudhoe Bay, Alaska from 1 July to 30 September 2014. The survey would cover an area of approximately 492 km², with 72.5 km² (15 percent) in waters less than 0.9 m deep and 334 km² (68 percent) in water depths greater than 0.9 m. The remainder of the survey, 85 km² (17 percent), would be on land. BP would use two source vessels, each with two sub-arrays that have a discharge volume of 620 in³, for a total discharge volume of 1,240 in³ per vessel. The two source vessels would use a flip-flop mode, with one vessel shooting while the other is recharging. Sensors located on the ocean bottom or buried below ground would be used to collect the seismic data. The survey would be conducted 24 hours per day and would cease on 25 August.¹

NMFS has preliminarily determined that the proposed activities could modify temporarily the behavior of small numbers of up to nine species of marine mammals, but that the total taking would have a negligible impact on the affected species or stocks. NMFS does not anticipate any take of marine mammals by death or serious injury. NMFS also believes that the potential for temporary or permanent hearing impairment from seismic activities would be at the least practicable level because of BP's proposed mitigation and monitoring measures, as well as additional measures proposed by NMFS, which include—

¹ Activities occurring after 25 August would include equipment retrieval and crew demobilization.

- (1) using NMFS-approved vessel-based observers on each of the seismic source vessels to monitor marine mammals within (1) the 190- and 180-dB re 1 μ Pa exclusion zones and (2) the 160-dB re 1 μ Pa harassment zone;
- (2) monitoring activities during daylight hours throughout the entire survey period, including when airguns are not operating;
- (3) using ramp-up, delay, power-down, and shut-down procedures to prevent takes of marine mammals within the exclusion zone;
- (4) not commencing ramp-up of the airgun from a full shut-down in periods of poor visibility if the entire 180-dB re 1 μ Pa exclusion zone is not visible;
- (5) ceasing airgun operations on 25 August 2014;
- (6) prohibiting the continuous firing of a single airgun for longer than three hours when the purpose of doing so is to avoid the requirement to monitor the exclusion zone prior to and during ramp-up procedures;
- (7) avoiding vessel and aircraft interactions with whales through operational and speed reduction procedures as appropriate;
- (8) conducting a fish monitoring program;
- (9) reporting injured and dead marine mammals to the NMFS Office of Protected Resources, the NMFS Alaska Stranding Hotline, and the Alaska Regional Stranding Coordinators; and
- (10) submitting field and technical reports and a final comprehensive report to NMFS.

Availability of marine mammals for subsistence

For the proposed seismic survey BP has signed a conflict avoidance agreement with the Alaska Eskimo Whaling Commission and the whaling captains' associations of 11 North Slope communities. BP has also met, and plans to continue meeting, with various stakeholders to develop and implement appropriate mitigation measures. Such measures are intended to minimize impacts on Alaska Natives, who use marine mammals for subsistence. As part of the plan, BP would not commence airgun operations until after the spring hunt has occurred and would cease airgun operations on 25 August, before the start of the Cross Island fall bowhead whale hunt. BP would also work closely with affected communities and employ local Inupiat communicators. Based on the description of the proposed activity and associated mitigation measures, NMFS has preliminarily determined that the proposed taking would not have an unmitigable adverse impact on the availability of marine mammals for subsistence use by Alaska Natives.

RECOMMENDATIONS AND RATIONALE

Estimating takes of marine mammals

BP used different methods for different species to estimate the number of takes expected to result from the proposed seismic survey. For beluga and bowhead whales, it used data from the 2012 and 2013 Aerial Surveys of Arctic Marine Mammals (ASAMM) flown in July and August in the Beaufort Sea to estimate minimum, average, and maximum densities. BP then multiplied the species-specific densities by size of the harassment zone and the number of survey days. For ringed, bearded, and spotted seals, it used observer sightings data, collected during four shallow-water ocean bottom cable seismic surveys in the Beaufort Sea, to derive average and maximum density estimates. BP then multiplied the sightings per hour by size of the harassment zone and the number of survey hours. For other species expected to be encountered only rarely during the survey (killer whales,

harbor porpoises, gray whales, and ribbon seals), density data was not available and BP instead estimated numbers of takes based on the likelihood of occurrence in the survey area.

An accurate characterization of the size of the harassment zone is necessary for obtaining reliable estimates of the numbers of animals taken. BP estimated the Level B harassment zone radius to be 5 km for the 160-dB re 1 μ Pa threshold. That estimate was based on sound source verification measurements associated with other seismic surveys conducted in the Beaufort Sea. However, the referenced surveys had a maximum discharge volume of only 880 in³. The discharge volume associated with the proposed survey could be up to 1,240 in³. The Commission is not convinced that the distances estimated by BP for the 190-, 180-, and 160-dB re 1 μ Pa thresholds would be the same for the proposed survey because the discharge volumes were considerably different. In such cases, in-situ sound source and sound propagation measurements are the most effective way to verify the accuracy of the proposed zones. The Commission recommends that NMFS require BP to conduct sound source and sound propagation measurements for the proposed seismic survey to ensure that the exclusion and harassment zones have not been underestimated. The methods used to calculate the zones should be reviewed and cross-checked before they are implemented. In at least one previous incidental harassment authorization, the methods and calculations were not reviewed and the zones were reduced during the survey. After the calculations were reviewed post-survey, it became apparent that the zones were reduced incorrectly. Therefore, the Commission recommends that NMFS only authorize an adjustment in the size of the exclusion and/or harassment zones during the open-water season if the size(s) of the estimated zones are determined to be too small.

BP estimated that the ensonified area² on any given day would be 78.5 km². However, using the area of a circle to estimate the size of the ensonified area would be correct only if the sound source was stationary. For surveys in which the source is moving (i.e., towed airgun arrays), the ensonified area should instead be based on the total linear distance surveyed by the vessel in a day, taking into account the distance to the Level B harassment threshold. That area would presumably be more than the 78.5 km² estimated for each vessel for the proposed survey. BP and NMFS should use that revised estimate of the ensonified area to determine the numbers of animals that could be taken. Accordingly, the Commission recommends that NMFS require BP to recalculate take estimates for beluga and bowhead whales and ringed, bearded, and spotted seals using the revised ensonified area estimate for a moving sound source.

NMFS stated in the *Federal Register* notice that it proposes to authorize the maximum number of estimated takes for all species to ensure that exposure estimates are not underestimated (79 Fed. Reg. 21373). Consistent with that intention, NMFS proposed takes for ringed, bearded, and spotted seals based on BP's maximum sightings rates for those three species. The Commission agrees with that approach, as sightings data collected by protected species observers during seismic surveys are not comparable to data from rigorous scientific surveys and are not likely to represent the actual numbers of animals in the project area. The use of maximum sightings rates is also appropriate given that correction factors were not applied to the observer sightings rates to account for animals missed due to availability or detection biases.

However, for beluga and bowhead whales, NMFS used average rather than maximum densities as the basis for its proposed takes. NMFS indicated that 2012/2013 survey data included

² The ensonified area was estimated to be 5 km x 5 km x 3.14 based on the area of a circle, which equates to 78.5 km².

sightings and effort data in the estimation of densities from areas more offshore than what would be included in the proposed survey, thus the maximum densities would overestimate the numbers of animals expected in the nearshore waters of the survey. Although that rationale might be appropriate for beluga whales, which are typically found in greater numbers offshore than in the proposed survey area, it is not appropriate for bowhead whales, which the Commission expects would be more likely to occur at maximum densities closer to shore. In any case, the Commission has commented on several occasions that NMFS is inconsistent in its use of average versus maximum densities to estimate takes and has recommended that maximum densities be used due to uncertainties in the density and abundance of marine mammal species in the Beaufort Sea and the increasing inter-annual variability in environmental conditions in the Arctic. Takes based on maximum densities would also provide greater assurance that the total potential taking has no more than a negligible impact on the affected stocks. For those reasons, the Commission recommends that NMFS use species-specific maximum density estimates as the basis for estimating the numbers of marine mammals to be taken.

Monitoring measures

BP has proposed that observers would monitor for marine mammals 30 minutes before and during the proposed activities. NMFS agreed with that approach but did not include a requirement for post-activity monitoring. In general, post-activity monitoring is needed to ensure that marine mammals are not taken in unexpected or unauthorized ways or in unanticipated numbers. Some types of taking (e.g., taking by death or serious injury) may not be observed until after the activity has ceased. Post-activity monitoring is the best way, and in some situations may be the only reliable way, to detect certain impacts. Accordingly, the Commission recommends that NMFS require BP to monitor for marine mammals 30 minutes before, during, and 30 minutes after the proposed activities.

In its proposed authorization, NMFS has indicated that BP would deploy one vessel-based protected species observer to monitor marine mammals. For activities in which the Level B harassment zone is of considerable size (5 km in this case), two observers would increase the probability of detecting marine mammals approaching or within the harassment zone. Additional observers could also assist in the collection of data on activities, behavior, and movements of marine mammals in the exclusion and disturbance zones. Behavioral response information is critical for understanding the effect of acoustic activities on various marine mammal species. The Commission recommends that NMFS require BP to deploy a minimum of two protected species observers to 1) increase the probability of detecting all marine mammals in or approaching the Level B harassment zones and 2) assist in the collection of data on activities, behavior, and movements of marine mammals around the source.

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The Commission appreciates the opportunity to review this incidental harassment authorization. Please contact me if you have questions regarding these recommendations.

Sincerely,

A handwritten signature in blue ink that reads "Rebecca J. Lent". The signature is written in a cursive style with a large initial "R".

Rebecca J. Lent, Ph.D.
Executive Director

Cc: Jon Kurland, National Marine Fisheries Service Alaska Regional Office
Jim Kendall, Bureau of Ocean Energy Management Alaska Region