



MARINE MAMMAL COMMISSION

13 May 2015

Ms. Jolie Harrison, Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, Maryland 20910-3226

Dear Ms. Harrison:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the application from SAExploration, Inc., (SAE) seeking an incidental harassment authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA). SAE is seeking authorization to take small numbers of marine mammals by harassment incidental to a seismic survey in the Alaskan Beaufort Sea during the 2015 Arctic open-water season. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 14 April 2015 notice (80 Fed. Reg. 20084) announcing receipt of the application and proposing to issue the authorization subject to certain conditions. The Commission reviewed and provided comments on similar incidental harassment authorization applications from SAE in 2013 and 2014.

Background

SAE plans to conduct a 3-dimensional (3D) ocean-bottom node seismic survey in the nearshore waters of the Beaufort Sea between Harrison Bay and the Sagavanirktok River Delta from 1 July to 15 October. SAE plans to survey a maximum of 777 km² within a larger 4,562-km² area. The survey would involve deploying and retrieving marine sensor nodes on the ocean floor using two survey vessels using a "ping/pong" shooting technique. Each vessel would be equipped with a 620-in³ airgun array, and the two arrays (totaling 1,240 in³) would be used together in deeper water (> 15 m). Other survey equipment would include a 10-in³ mitigation airgun, a 35- to 55-kHz ultra-short baseline transceiver (pinger), and a 35- to 55-kHz OBC transponder. The survey will use a "recording patch" approach, with each patch equating to a 192-km² area. Although the project duration is 70 days, SAE expects that it would operate the airguns about 70% of the 70 days (or about 49 days).

NMFS preliminarily has determined that the proposed activities could temporarily modify the behavior of small numbers of up to six 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. It believes that the potential for temporary or permanent hearing impairment will be at the least practicable level because of SAE's proposed mitigation measures. The mitigation, monitoring, and reporting measures include—

- (1) conducting in-situ sound source and sound propagation measurements for the 1,240-in³ airgun array and adjusting the Level A harassment zones (i.e., based on the 190- and 180-dB

- re 1 μ Pa isopleths for pinnipeds and cetaceans, respectively) and Level B harassment zone (i.e., based on the 160-dB re 1 μ Pa threshold for all marine mammals), as necessary;
- (2) using trained protected species observers on both survey vessels and also on the mitigation vessel to monitor the Level A and B harassment zones for a minimum of 30 minutes before, during, and for 30 minutes after seismic activities;
 - (3) using ramp-up, delay, power-down, and shut-down procedures;
 - (4) restricting ramping up from a full shutdown at night or in periods of poor visibility (e.g., fog, heavy snow or rain) if the entire 180-dB re 1 μ Pa Level A harassment zone is not visible;
 - (5) prohibiting the firing of a single airgun for more than once per minute or for longer than three hours when the purpose of doing so is to avoid the requirement to monitor the Level A harassment zones prior to and during ramp-up procedures;
 - (6) using avoidance measures and speed restrictions in proximity to whales and in poor visibility conditions;
 - (7) using passive acoustic monitoring to supplement visual monitoring and to measure ambient sound levels;
 - (8) making all visual and acoustic monitoring data available on the website for the Ocean Biogeographic Information System-Spatial Ecological Analysis of Megavertebrate Populations (OBIS-SEAMAP) to facilitate analyses of impacts and the efficacy of mitigation measures;
 - (9) reporting injured and dead marine mammals to the NMFS Office of Protected Resources and the Alaska regional stranding coordinator using NMFS's phased approach and suspending seismic activities, if appropriate; and
 - (10) submitting field and technical reports and a final comprehensive report to NMFS.

Availability of marine mammals for subsistence

SAE and its joint venture partner Kuukpiik Corporation have developed a plan of cooperation in consultation with North Slope communities outlining measures that it would implement to minimize any adverse effects on the availability of marine mammals for subsistence. That plan includes requirements for SAE to maintain the minimum approach distances and operational requirements outlined in the previous section, as well as (1) participating with other operators to manage the Com-Center program for facilitating communication with subsistence whalers during the fall bowhead hunt, (2) monitoring the position of all of its vessels and avoiding subsistence activity, (3) routing barge and transit vessels to at least 32 km offshore from 31 August to 31 October and to at least 8 km offshore at all other times, and (4) completing seismic activities in time to have all vessels transit south through the Bering Strait no later than 15 November 2015. SAE has agreed to minimize impacts on bowhead whale hunts by not conducting seismic surveys (1) prior to 25 July inside the barrier islands from Pt. Storkerson to Thetis Island, (2) from 25 August to the close of fall bowhead whale hunting activities in Nuiqsuit from the Canning River to Pt. Storkerson, and (3) from 15 September to the close of fall bowhead hunting activities in Barrow from Pitt Point (on the east side of Smith Bay) to a location about halfway between Barrow and Peard Bay. SAE also has signed a conflict avoidance agreement with the Alaska whaling communities outlining measures that it would implement to minimize impacts on bowhead whale hunts. Based on the survey design, the timing and location of the proposed seismic activities, and the proposed 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.

The location of actual survey activities

SAE has indicated that the survey area during the 2015 open-water season would be limited to 777 km², but that the survey could occur anywhere within a 4,562 km² area. Information regarding the specific areas that would be surveyed by SAE, or specific times of year for the survey, was not available as part of the proposed incidental harassment authorization. Although NMFS has indicated that the information would be available before the final incidental harassment authorization is issued, SAE must have some indication as to where and when survey activities would be conducted in order to determine what species may be affected and how many animals may be taken, as the potential distribution of marine mammals is not uniform throughout the proposed survey area or throughout the open-water season. In lieu of specific information regarding where and when the survey would be conducted, it appears that SAE has requested takes for all species that could occur in the broader project area as a (perhaps overly) precautionary measure. This approach undermines NMFS's ability to meet its responsibility under section 101(a)(5)(D)(ii)(I) of the MMPA to structure incidental harassment authorizations to effect the "least practicable impact" on marine mammal species and stocks. If NMFS does not know with greater specificity where and when activities will occur, it is unable to limit those activities to avoid areas and times when marine mammals may be more abundant.

The total survey area for the project, 777 km², appears low since it equates to roughly four times the size of each recording patch (192 km²). SAE has indicated that each patch would take about four days to shoot. That means that if the proposed total survey area of 777 km² is indeed accurate, SAE would be able to shoot that area within 16 days. Although NMFS has indicated that some patches could be shot more than once, the proposed 49 days of airgun operations appears excessive in relation to the proposed total survey area. SAE may have underestimated the total survey area that could be shot during the season by not including the total number of patches to be shot or not factoring in the number of times a single patch would be shot.

For these reasons, the Commission recommends that, prior to issuing the authorization, NMFS require SAE to determine what areas it will survey and when, in order to ensure that the proposed survey area and associated numbers of takes are consistent with what NMFS plans to authorize and, if they are not, amend the numbers of takes accordingly.

Take estimates

The Commission is concerned that the method used by SAE and NMFS to estimate numbers of takes is based on the total ensonified area rather than the area expected to be ensonified on a daily basis, as is standard for a moving sound source. For Level B harassment NMFS used the total ensonified area for the proposed survey (which NMFS stated would be 1,463 km², with a 731.5-km² area ensonified in both summer and fall). NMFS used a similar approach to determine the number of Level A harassment takes by using the total ensonified Level A harassment area¹ (805 and 883 km², with a 402.5- and 441.5-km² area ensonified in both summer and fall for the 190- and 180-

¹ Because the radii to both the 190-dB re 1 μPa (250 m) and 180- dB re 1 μPa (910 m) thresholds are essentially equal to or larger than the mid-point between the seismic source lines (250 m), NMFS believed the entire 777-km² area would be ensonified, plus protective buffers of 250 and 910 m around that area. However, the Commission understands that only 49 km² would be ensonified on a given day, plus protective buffers around that area.

dB re 1 μ Pa, respectively). None of the total ensonified areas account for the actual area that would be ensonified on a daily basis, or the duration of the survey, resulting in an underestimate of the numbers of Level B harassment takes for nearly all species and an overestimate of the numbers of Level A harassment takes for certain species. Therefore, the Commission recommends that NMFS use the method of area² times density times the number of survey days to estimate the total number of Level A and B harassment takes for each of the marine mammal species expected to be in the project area.

Authorization of incidental taking by Level A harassment

NMFS is proposing to authorize the incidental taking of marine mammals by Level A harassment under section 101(a)(5)(D) of the MMPA. Level A harassment is defined in the statute and regulation as “any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild” (section 3(18) of the MMPA and 50 C.F.R. § 216.3). The Commission is concerned that NMFS has proposed, on multiple occasions, to authorize taking by Level A harassment under section 101(a)(5)(D) of the MMPA, rather than through regulations issued in accordance with section 101(a)(5)(A). When NMFS proposed to authorize such taking previously³, the Commission advised NMFS that authorizing Level A harassment under 101(a)(5)(D) of the MMPA would be inconsistent with the intent of the MMPA and NMFS’s implementing regulations and therefore would set an inappropriate precedent⁴. Regulations implementing the incidental harassment authorization provisions of the MMPA (50 C.F.R. § 216.107) state that authorizations may be issued only for activities that may result in the incidental harassment of a small number of marine mammals, “except for activities that have the potential to result in serious injury or mortality, which must be authorized under § 216.105.” However, contrary to its own regulations, NMFS authorized the taking by Level A harassment for those previous activities under incidental harassment authorizations.

The Commission understands that NMFS plans to issue Level A harassment takes based on the assumption that, in the course of operations, SAE and other applicants would not be able to implement the proposed mitigation measures in time to prevent more than a brief exposure of marine mammals to sound levels exceeding 190 dB re 1 μ Pa for pinnipeds or 180 dB re 1 μ Pa for cetaceans. However, actual experience in implementing mitigation measures may indicate otherwise. During its 2014 seismic survey in the Beaufort Sea, three seals and one beluga whale were documented as entering the Level A harassment zone. In each of these instances SAE ceased airgun activity immediately until the animal was not seen again and the area was cleared for ramp up (Lomac-MacNair et al. 2014). NMFS’s requirement to shut down the sound source when an animal is seen approaching or within the Level A harassment zone is intended to prevent a prolonged exposure that could result in temporary or permanent hearing loss (i.e., a Level A harassment take). It appears that SAE abided by those authorization requirements in 2014. If NMFS now anticipates that the mitigation measures are not being implemented as required and believes that animals could be exposed to injurious sound levels, or that the required mitigation measures are not effective at preventing Level A harassment, it should develop consistent criteria for when such takes should be authorized. Therefore, the Commission recommends that NMFS (1) develop criteria for

² Based on the estimated ensonified area per day, without overlap.

³ ION Geophysical (77 Fed. Reg. 49922) and Eglin Air Force base (78 Fed. Reg. 33357 and 79 Fed. Reg. 72631)

⁴ See Commission letters dated 21 September 2012, 27 June 2013, and 24 December 2014.

determining when incidental taking by Level A harassment should be authorized (i.e., types of sound sources, project locations, species, effectiveness of mitigation measures) and (2) authorize any such takes through regulation under section 101(a)(5)(A) of the MMPA and a letter of authorization rather than through an incidental harassment authorization. The Commission would welcome an opportunity to discuss the development of such criteria with NMFS.

The Commission is aware of several other pending authorizations in which similar activities have been proposed for which NMFS has not proposed to authorize taking by Level A harassment. It is not clear how NMFS plans to proceed with those authorizations. The Commission believes that NMFS should be consistent in its evaluation of taking by Level A harassment and its subsequent issuance of incidental take authorizations.

Sound source verification

NMFS has proposed that SAE conduct in-situ sound source measurements for the 1,240-in³ airgun array to ensure accurate characterization of the Level A and B harassment zones for that sound source. SAE would then submit a report on the preliminary results of the survey to NMFS and use the adjusted Level A and B harassment zones for the remainder of the survey. As noted by the Commission in past letters (e.g., 28 July 2014), NMFS should not authorize a reduction in the size of the Level A harassment zones until SAE and NMFS have verified the in-situ measurements. Verification of the measurements before they are used to adjust the Level A and B harassment zones could prevent unintended Level A harassment takes, as has happened in the past (Beland et al. 2013). Therefore, the Commission recommends that NMFS verify that any adjustments to the size of the Level A and/or B harassment zones, based on in-situ measurements, are accurate before such adjustments are made.

Mitigation and monitoring measures

In 2014, NMFS required that SAE implement measures to ensure that aggregations of bowhead and gray whales were protected from disturbance from seismic activities (79 Fed. Reg. 51963). NMFS has defined aggregations as 12 or more whales of any age/sex class that appear to be engaged in a non-migratory, significant biological behavior (e.g., feeding, socializing). To ensure those same protections are in place for the proposed authorization, the Commission recommends that NMFS require that SAE refrain from initiating or cease seismic activities if an aggregation of bowhead or gray whales (i.e., 12 or more whales of any age/sex class that appear to be engaged in a non-migratory, significant biological behavior (e.g., feeding, socializing)) is observed within the Level B harassment zone.

Although the exact location of SAE's proposed seismic survey area for the 2015 open-water season has yet to be identified, SAE indicated that the proposed survey area potentially includes spotted seal and ringed seal habitat. In 2014, SAE conducted a limited (three-day), vessel-based pinniped survey in the seismic survey area with the intent of monitoring habitat use at known spotted seal haul-out areas in the Colville River Delta before, during, and after seismic activities. Unfortunately the survey did not meet all of its objectives due to the shortened survey duration, cold-weather conditions, and high tide levels that appeared to prevent animals from hauling out as expected (SAE and Owl Ridge 2015). SAE ultimately concluded that vessels are not an effective platform for monitoring spotted seal haul-out sites. Another operator conducted an unrelated aerial

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survey for spotted seals in the Colville River Delta in 2014. Based on observations made during that survey, it appears that aerial surveys may be more effective at monitoring habitat use at haul-out areas than vessel surveys. However, at the altitude flown it was difficult to distinguish spotted from ringed seals. Based on this experience, if SAE intends to conduct seismic activities in the vicinity of pinniped haul-out areas, the Commission recommends that NMFS encourage SAE to coordinate with other operators and researchers who may be conducting aerial surveys with the goal that information collected during those surveys will assist SAE in monitoring pinniped use of haul-out sites before, during, and after SAE's planned seismic survey.

Peer review panel recommendations

NMFS convened an independent peer review panel in March 2015 to discuss SAE's marine mammal mitigation and monitoring plan, pursuant to regulations at 50 C.F.R. § 216.108(d). Although the recommendations of the panel will not be available until after the close of the comment period, the Commission believes information contained in the peer review report should be incorporated in the final incidental harassment authorization, including those specific to the design and implementation of passive acoustic monitoring. As such, the Commission recommends that NMFS incorporate the peer review panel's recommendations into the final authorization and, if necessary, consult with personnel directly associated with implementing passive acoustic monitoring to ensure that the monitoring objectives are able to be met.

I trust these comments will be helpful. Please let me know if you or your staff have questions with regard to this letter.

Sincerely,



Rebecca J. Lent, Ph.D.
Executive Director

Cc: Jon Kurland, National Marine Fisheries Service Alaska Regional Office

References

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- Lomac-MacNair, K., C. Thissen, and M.A. Smultea. 2014. Draft NMFS 90-Day Report for Marine Mammal Monitoring and Mitigation during SAExploration's Colville River Delta 3D Seismic Survey, Beaufort Sea, Alaska, August to September 2014. 122 pages.
- SAE and Owl Ridge Natural Resource Consultants. 2015. Spotted seal haulout surveys, Colville River Delta - 2014. 11 pages.