13 June 2016

Ms. Kimberly Klein
U.S. Fish and Wildlife Service
Office of Marine Mammals Management
1011 East Tudor Road
Anchorage, Alaska 99503

Dear Ms. Klein:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the application submitted by BlueCrest Alaska Operating, LLC (BlueCrest), seeking authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA) to take small numbers of northern sea otters by harassment incidental to oil and gas exploration activities in Cook Inlet, Alaska. The Commission also has reviewed the U.S. Fish and Wildlife Service's (FWS) 13 May 2016 notice (81 Fed. Reg. 29890) requesting comments on its proposal to issue the authorization, subject to certain conditions. The Commission provided comments in its 28 September 2014 letter on a similar application from BlueCrest.

Background

BlueCrest is proposing to conduct an oil and gas production drilling program at two locations in lower Cook Inlet. BlueCrest would use a tug to tow a jack-up drill rig to/from the well sites and would use the rig to drill up to three wells. Drilling activities would involve impact hammering of drive pipes prior to drilling and vertical seismic profiling (VSP) of the wells. BlueCrest proposes to drive a 30-inch drive pipe at each of the wells using an impact hammer. Pipe driving is expected to last up to three days at each well (12 days maximum[1]). VSP activities would be conducted at each well after drilling is complete using an airgun array with a maximum volume of 880 in^3 and would occur for two days at each well. Pipe driving and VSP activities would be limited to daylight hours and occur only when sea conditions are calm. The proposed activities would occur between 15 April and 31 October 2016 for a total of 135 days.

FWS preliminarily has determined that the proposed activities could modify temporarily the behavior of small numbers of northern sea otters, but that the total taking would have a negligible impact on the stock. FWS does not anticipate any take of sea otters 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 BlueCrest's proposed mitigation measures. The mitigation, monitoring, and reporting measures include—

[1] Although pipe driving should only occur on 9 days, FWS included 12 days in the authorization.

- using observers on the drill rig to monitor the Level A and B harassment zones (based on thresholds of 190 and 160 dB re 1 μPa, respectively) during all pipe-driving and VSP activities and for at least 30 minutes prior to ramp-up of the airguns;
- using various ramp-up/soft-start, delay, power-down, and shut-down procedures;
- implementing emergency shut-down procedures if one or more sea otters are within the area of VSP activities and showing signs of acute distress;
- avoiding vessel and aircraft interactions with sea otters and subsistence hunting through operational and speed reduction procedures, as appropriate;
- implementing oil spill prevention and response procedures, if necessary;
- reporting all injured or dead sea otters to FWS within 24 hours; and
- submitting weekly monitoring reports and an after-action monitoring report to FWS.

Estimating takes of sea otters

The *Federal Register* notice provided two different density estimates for sea otters. The first was 2.38 sea otters/km^2, based on a survey conducted in the drilling area by Larned (2006) and using a correction factor from Evans et al. (1997). The second was 2.6 sea otters/km^2, based on a fall 2013 survey of Cook Inlet using line-transect methods and DISTANCE sampling methods (Owl Ridge unpublished data), a more robust methodology for estimating densities. The first density estimate was derived from (1) opportunistic sightings of sea otters observed during a Steller's eider survey in winter 2004 and 2005 and (2) included an expansion factor based on the ratio of the full survey area to the sampled area in Cook Inlet and a correction factor from Evans et al. (1997) of sea otters missed during aerial surveys in the Aleutian Islands. It is not clear why the density estimate from the more recent and more robust 2013 line-transect survey that occurred in the same season as the proposed activities was not used to calculate the take estimates. Rather, FWS stated that it would be realistic to utilize the estimate of 2.38 sea otters/km^2 based on the 2.6 sea otters/km^2 density—an illogical justification. Thus, the Commission recommends that FWS recalculate all take estimates using the density estimate of 2.6 sea otters/km^2.

The *Federal Register* notice also indicated that VSP activities would occur for up to two days at each well site (81 Fed. Reg. 29894) and that three wells are expected to be drilled (81 Fed. Reg. 29892). However, in its take estimate calculation, FWS used only three days for VSP activities (Table 2 of the *Federal Register* notice). FWS should have used a total of six days for VSP activities. The Commission therefore recommends that FWS recalculate the take estimates associated with VSP activities by using a total of six days. In addition for VSP activities, FWS appears to have rounded its take estimate[2] to a whole number before multiplying by the number of days of activities. That same method was not used for pipe-driving activities. Accordingly, the Commission recommends that FWS apply standard rounding rules for estimating takes during pipe-driving activities before summing the number of takes across days, as was done for VSP activities.

FWS considered the total number of takes to be conservative because only 15 percent of the otters observed in 2013 dove underwater within 260 m of the drill rig. Thus, otters at the surface would not be exposed to underwater sounds while drifting past the drill rig. Although sea otters may spend a large portion of the day at the surface, any time during the day that otters dive underwater

[2] Based on an area x density method.

to forage or swim exposes otters to in-water sound, resulting in a take from either pipe-driving or VSP activities—activities in which Level B harassment zones extend beyond 260 m to well over a few kilometers. The Commission therefore does not consider the take estimates to be conservative.

Sound sources considered for Level B harassment

FWS indicated that it had determined that Level B harassment occurs when otters are exposed to underwater sounds exceeding 160 dB re 1 μPa, regardless of whether the sound is continuous or impulsive. The Commission is unsure of the basis for this determination given that the generic threshold for continuous sound is 120 dB re 1 μPa. FWS stated in its previous authorizations[3] for vibratory pile driving that Level B harassment will be considered to have occurred when sea otters are exposed to sound greater than 120 dB re 1 μPa for continuous sound sources (during vibratory pile extraction and driving; 79 Fed. Reg. 58800). Further, in the 2014 authorization for BlueCrest activities, FWS noted that continuous sound levels from various drilling activities did exceed the 120 dB re 1 μPa (79 Fed. Reg. 51591)[4], but nowhere in that BlueCrest authorization did FWS state that the threshold for continuous sources was 160 dB re 1 μPa. Interestingly, FWS included those same references for the various drilling activities and the 120-dB re 1 μPa threshold in the proposed authorization (81 Fed. Reg. 29899) yet referenced 160-dB re 1 μPa as the threshold for continuous sound sources.

Given that vessel sounds associated with the tug towing the drill rig and drilling operations are both considered continuous sound sources, a Level B harassment threshold of 120 dB re 1 μPa should have been used. Therefore, the Commission recommends that FWS remove all reference to the 160-dB re 1 μPa threshold for continuous sound sources in the final authorization and reassess whether Level B harassment takes of sea otters are expected to occur from towing and drill rig operations based on the 120-dB re 1 μPa threshold. The Commission refers FWS to the National Marine Fisheries Service's (NMFS) proposed authorization for BlueCrest's proposed drilling activities and its assessment of whether takes are likely to occur from towing and drilling operations (81 Fed. Reg. 35549 and 35550, respectively).

Mitigation and monitoring measures

Distances to the harassment thresholds

The *Federal Register* notice stated that distances to the 190- and 160-dB re 1 μPa thresholds associated with impact pipe-driving and VSP activities were based on Illingworth and Rodkin (2014). However, the distance to the 190-dB re 1 μPa threshold for VSP activities is not consistent with that one identified in Table 2 of that document. It appears that FWS is using the best fit (average) rather than the 90th percentile values, thus the distance to the 190-dB re 1 μPa threshold should be 75 not 120 m. If FWS intended to base the distances on the best fit rather than 90th percentile values, the Commission recommends that it then use 75 m as the Level A harassment zone based on Table 2 in Illingworth and Rodkin (2014).

[3] An authorization FWS itself references on 81 Fed. Reg. 29892 of the proposed authorization.
[4] FWS then determined that otters would be disturbed from drill rig operations in the 2014 authorization.

Number of observers for monitoring purposes

In its proposed authorization, FWS would require applicants to deploy trained and qualified observers to monitor the Level B harassment zone for all offshore exploration activities expected to result in underwater sound levels of 160 dB re 1 μPa or greater. Because the Level B harassment zones associated with such activities are of considerable size, at least two observers should stand watch at the same time on the drilling rig to increase the probability of detecting sea otters approaching or within the Level B harassment zone. Additional observers also could assist in the collection of data on activities, behavior, and movements of sea otters in the Level B harassment zone. Behavioral response information is critical for understanding the effect of sound-producing activities on various marine mammal species, including sea otters for which there is a dearth of relevant data. Therefore, the Commission recommends that FWS require BlueCrest to have a minimum of two protected species observers standing watch on the drilling rig to 1) increase the probability of detecting all sea otters in or approaching the Level B harassment zone and 2) assist in the collection of data on activities, behaviors, and movements of sea otters within that zone.

Pre- and post-activity monitoring

FWS has not specified how long ramp-up (for VSP activities) and soft-start (for pipe-driving activities) procedures would be delayed or how long power and shut down would last, if a sea otter is detected approaching or within the Level A harassment zone. Typically, if a marine mammal(s) is sighted in the Level A harassment zone during the 30-minute period prior to ramp up (for seismic activities) or soft start (for pipe-driving activities), those activities would be delayed until the marine mammal(s) is sighted outside of the Level A harassment zone or the animal(s) is not sighted for at least 15 minutes[5]. A similar clearance time of 15 minutes is used if power- and shut-down procedures are employed and an animal has not been observed leaving the zone. Therefore, the Commission recommends that FWS require that, if a sea otter(s) is observed approaching or within the Level A harassment zone, BlueCrest use a clearance time of 15 minutes for all delay, power-down, and shut-down procedures unless the sea otter(s) is sighted outside of the zone.

In addition, FWS did not propose pre-activity monitoring for pipe-driving activities or post-activity monitoring for any of the proposed activities. Pre-activity monitoring was proposed to occur for 30 minutes prior to ramping up the airguns, but a similar monitoring period was not included when initiating soft-start procedures for pipe-driving activities. Further, post-activity monitoring is necessary to ensure that sea otters 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 activities have 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 FWS require all applicants to monitor the Level A and B harassment zones for at least 30 minutes before and 30 minutes after all proposed activities.

[5] A 15-minute clearance time is typically required for species with relatively short dive times, such as sea otters, pinnipeds, and small odontocetes.

Emergency shut-down procedures

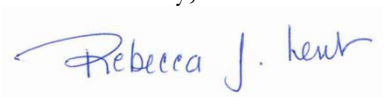
FWS has proposed implementing emergency shut-down procedures if one or more sea otters are detected within the area of VSP activities and showing signs of acute distress. Those procedures should apply not just to VSP activities but instead to all authorized activities that may be causing acute distress in sea otters. The Commission recommends that FWS require BlueCrest to implement emergency shut-down procedures if a sea otter(s) is within the area of any of the proposed activities and is exhibiting acute distress.

Start date of activities

The *Federal Register* noted that towing of the jack-up rig to the well site would occur in early spring or summer 2016, and potentially as early as 15 April 2016. However, the notice was not published until 13 May 2016, and it is unclear if those activities have yet occurred. Since FWS received BlueCrest's application in November 2015, well before activities were proposed to begin, the authorization should have been published in a more timely manner. Furthermore, FWS indicated that the proposed activities would occur for 135 days from 15 April to 31 October. Given that the authorization likely will not be issued until late June or early July, it would be impossible for the proposed activities to last for 135 days unless they extend beyond October. The Commission recommends that, in the future, FWS publish and finalize proposed incidental take authorizations before planned activities are expected to begin and if not, that the period of activities and estimated numbers of takes be adjusted accordingly.

I trust these comments will be helpful. Please let me know if you or your staff has questions with regard to the Commission's recommendations.

Sincerely,



Rebecca J. Lent, Ph.D.
Executive Director

cc: Jolie Harrison, National Marine Fisheries Service, Office of Protected Resources
Jon Kurland, National Marine Fisheries Service, Alaska Regional Office

References

Evans, T.J., D.M. Burn, and A.R. DeGange. 1997. Distribution and relative abundance of sea otters in the Aleutian Archipelago. U.S. Fish and Wildlife Service. 29 pages.

Illingworth and Rodkin, Inc. 2014. 2013 Cook Inlet Exploratory Drilling Program–Underwater sound source verification assessment. Report prepared for BlueCrest Energy, Inc. by Illingworth & Rodkin, Inc., Petaluma, CA. 20 pages.

Larned, W.W. 2006. Winter distribution and abundance of Steller's eiders (*Polysticta stelleri*) in Cook Inlet, Alaska 2004–2005. OCS Study, Minerals Management Service 2006-066. 37 pages.