

Open Water Peer Review Panel Monitoring Plan Recommendations Report February 2013

The Open Water Peer Review Panel has reviewed SAExploration's marine mammal monitoring plan for its proposed 3D seismic survey in the Alaskan Beaufort Sea during the summer of 2013. At the time of the Peer Review Panel meetings, SAExploration was unsure of their client for the proposed seismic survey. Therefore, they were unable to provide specific information on when or where their operations would occur. Specific information on the location and timing of the operations is necessary to design an appropriate marine mammal monitoring and mitigation plan (4MP). Specific information is needed because the presence, density, and behavior of marine mammal species vary spatially and temporally over the course of the open water season within the large study area shown in Figure 1-1 of the IHA application. Further, SAExploration plans to adjust their 4MP once they have conducted the sound source verification tests to gather more accurate measures for the safety and disturbance radii. There was concern among panelists that the lingering uncertainty in the 4MP would prevent the panel from having an opportunity to make recommendations on SAExploration's final 4MP and that the necessary resources (e.g., aircraft, acoustic recording devices, additional vessels) for monitoring might not be available on short notice once the operations commenced.

The IHA application should contain an attainable, defensible, and detailed 4MP for the panel to review. Therefore, the panel considered the application from SAExploration to constitute only a preliminary outline of the information needed for its review of the proposed activity. The monitoring plan, in particular, would require substantial augmentation and clarification before the panel could conduct a meaningful review and provide useful recommendations. Particular points that a revised monitoring plan should address are discussed below.

1. Monitoring in the existing 4MP was comprised solely of Protected Species Observers (PSOs) on the source vessels. The panel does not think that only having PSOs on vessels and conducting source verification surveys is sufficient for a full-scale seismic survey that will ensoundify a large area over a period of many weeks. SAExploration should conduct broad-spectrum passive acoustic monitoring for marine mammals in their study area before, during, and after their operations to further understanding of the spatiotemporal distribution and acoustics of the marine mammal community in the area, and to provide a method of far-field monitoring. In addition, SAExploration should consider collaborating with Shell to expand Shell's aerial surveys and acoustic monitoring efforts in the Beaufort Sea as a way to address SAExploration's specific monitoring needs.
2. The estimated safety radii presented in section 1.3 of the IHA application are very small compared to similar studies, which likely results in take estimates that are biased low. To adequately estimate the sound pressure level isopleths, SAExploration should use site-specific acoustic propagation models and empirical measurements rather than a simple model of geometric spreading. Given lack of information, applicants should err on the precautionary side when estimating take. In this case, however, there are publicly available data from a BP seismic

shoot conducted in 2008, and perhaps data from other seismic surveys, that could be used to more appropriately estimate the sound field generated by the proposed operations.

3. NMFS OPR currently considers the disturbance zone from “continuous” sounds to extend out to the 120 dB isopleth, and for “impulsive” sounds to extend only to the 160 dB isopleth. Far-field monitoring was not included in the 4MP because SAExploration characterized the sounds from their airgun arrays as impulsive, and did not expect to monitor farther than the 160 dB zone. As discussed in more detail in the “2013 Expert Panel Review of Monitoring Protocols in Applications for Incidental Harassment Authorizations Related to Oil and Gas Exploration and Development in the Chukchi and Beaufort Seas” (hereafter referred to as the 2013 General Report), the panel requests that airguns be considered a “continuous” sound for monitoring purposes because, due to reverberation and multipath arrivals, the acoustic signal is spread over time and received less like an impulse, and more like an amplitude-varying but relatively continuous sound at distance. In addition, as noted in the 2013 General Report, based on evidence that bowhead whales deflect or cease calling at sound levels near ambient due to anthropogenic activities in the marine environment, the panel thinks that monitoring out to the 120 dB zone is important to better understand the animals’ reactions to anthropogenic activities and estimate actual take. Vessel-based PSOs are not able to adequately monitor either the 120 or 160 dB zone resulting from SAExploration’s proposed activities.
4. Future applications should be modified to use consistent units (metric is preferred), list actual abundance estimates (not N_{\min}), include all marine mammal stocks potentially affected by the activity (the northeastern Chukchi beluga stock was omitted from this application), and note that bearded and ringed seals are now listed as threatened species under the US Endangered Species Act.
5. Ideally, the monitoring plan should describe coordination with other operators in the area, including how numerous data sets from multiple sources would be integrated into the analysis of effects. The panel also encourages SAExploration to make monitoring data and ship track data (including a list of times when the airgun array was in operation) available to the public.