

# **Open Water Peer Review Panel Monitoring Plan Recommendations Report for Shell Ice Overflight Surveys**

**April 2014**

The Open Water Peer Review Panel (hereinafter referred to as the Panel) reviewed Shell's Marine Mammal Monitoring Plan (4MP) for its proposed ice overflight surveys in 2015 and 2016 in the Chukchi and Beaufort Seas, Alaska. Additional information regarding the proposed survey was provided directly by Shell and its contractors on the first day of the Panel meeting. To conduct its review, the National Marine Fisheries Service's Office of Protected Resources (PR) provided the panel with specific questions to answer (identified below in bold), as well as additional guidance based on the general monitoring requirements outlined in the implementing regulations of the Marine Mammal Protection Act (MMPA) (see Appendix). The following report summarizes Shell's proposed activities, answers the specific questions provided by PR, and provides additional recommendations as appropriate.

## Summary of Activities:

Shell intends to conduct ice overflight surveys in the Chukchi and Beaufort Seas during spring (May–July) break-up and winter (November–April) freeze-up periods from 1 May 2015 to 30 April 2016. The surveys would be conducted during daylight hours and would include a total of 4,630 km of tracklines. Shell has proposed 14 flights total: 5 fixed-wing and 1 helicopter flight during spring and 7 fixed-wing and 1 helicopter flight during winter. Flight altitudes would range from 30 to 610 m for the fixed-wing flights but would mostly be at or above 152 m. Flight altitudes would range from 15 to 152 m for the helicopter flights but would mostly be at or above 61 m.

The 4MP proposed by Shell (Attachment A of the IHA application) consists of using one trained protected species observer (PSO) to record marine mammal sightings and mitigate disturbance by having the aircraft avoid known concentrations of pinnipeds hauled out on ice or land. Shell has proposed to maintain a buffer of 1.6 km (1 mi) or greater when flying over areas where seals appear to be concentrated in groups of 5 or more. Shell would avoid landing on ice within 0.8 km (0.5 mi) of hauled out seals and avoid flying over polynyas and along adjacent ice margins to minimize disturbance of cetaceans. Shell would also engage with local communities to ensure ice overflights do not conflict with subsistence activities.

## **Questions**

**I. Will the applicant's stated objectives effectively further the understanding of the impacts of their activities on marine mammals and otherwise accomplish the goals stated below? If not, how should the objectives be modified to better accomplish the goals below?**

Shell identified its objectives for visual monitoring as follows:

- to provide information on the numbers of marine mammals potentially affected by the overflight program,
- to facilitate real time mitigation to prevent disturbance of marine mammals by aircraft sound or presence.

The Panel believed that the objectives for visual monitoring were appropriate. However, as outlined in Section II below, the Panel determined that Shell's monitoring plan could be enhanced to obtain the information necessary to accomplish these objectives.

## **II. Can the applicant achieve the stated objectives based on the methods described in the plan?**

Shell has proposed to deploy one PSO in the aircraft to look out for marine mammals. The PSO would only be able to monitor for marine mammals from one side of the aircraft, so Shell has indicated that crew members would also be used to monitor for marine mammals. The training that would be provided to crew members was not specified. The Panel recommended that crew members receive the same training as PSOs so that they are able to 1) detect pinnipeds hauled out on the ice, 2) identify marine mammals sighted by species (when possible) and 3) indicate any behavioral response of marine mammals to the aircraft.

## **III. Are there technical modifications to the proposed monitoring techniques and methodologies proposed by the applicant that should be considered to better accomplish their stated objectives?**

As noted above, the Panel recommended training for the crew members on species identification and the recording of behavioral responses of pinnipeds to the aircraft, especially distance to animals and the altitude at which behavioral responses were observed. In addition, the Panel recommended that airplanes maintain an altitude of at least 305 m (1,000 ft) until they reach the offshore survey areas of interest, and not land on ice within 1.6 km (1 mi) of hauled-out pinnipeds. These technical modifications should help to minimize disturbance of marine mammals encountered during surveys and quantify more accurately numbers of Level B harassment takes.

## **IV. Are there techniques not proposed by the applicant (i.e., additional monitoring techniques or methodologies) that should be considered for inclusion in the applicant's monitoring program to better accomplish their stated objectives?**

The Panel acknowledged that information regarding behavioral responses of marine mammals to aircraft is limited. Shell based its proposed mitigation measures and take estimates for pinnipeds on a study of behavioral responses of hauled-out ringed seals to fixed wing planes and helicopters in Greenland (Born et al. 1999). Additional information on behavioral responses would be helpful in evaluating the affect of Shell's planned overflight surveys on hauled-out pinnipeds and the efficacy of the proposed mitigation measures (i.e., the minimum approach distances). The Panel therefore recommended the use of a video camera during overflight

surveys to record behavioral responses in addition to having PSOs and trained crew members record behavioral responses.

The Panel also recommended that Shell investigate the possibility of using unmanned aerial systems to conduct the ice surveys, at least for the fixed-wing surveys that would not involve landing on the ice to collect samples.

**V. What is the best way for an applicant to present their data and results (formatting, metrics, graphics, etc.) in the required reports that are to be submitted to NMFS (i.e., 90-day report and comprehensive report)?**

The Panel recommended that Shell provide information on the altitude at which aircraft were flown and the distance and altitude at which behavioral responses were noted. Ideally a map should be included in the 90-day report that shows altitudes flown for different tracks and observed behavioral reactions. Shell should also present sightings and behavioral response data separately for landing events (if animals were seen during that time).

**References**

Born, E.W., F.F. Riget, R. Dietz, and D. Andriashek. 1999. Escape response of hauled out ringed seals (*Phoca hispida*) to aircraft disturbance. *Polar Biology* 21:171-178.

## Appendix

### Monitoring Plan Requirements

The MMPA implementing regulations generally indicate that each Incidental Harassment Authorization (IHA) applicant's monitoring program should be designed to accomplish one or more of the following: document the effects of the activity (including acoustic) on marine mammals; document or estimate the actual level of take as a result of the activity (in this case, seismic surveys or exploratory drilling programs); increase the knowledge of the affected species; or increase knowledge of the anticipated impacts on marine mammal populations. As additional specific guidance beyond that provided in the MMPA regulations, NMFS further recommends that monitoring measures prescribed in MMPA authorizations should be designed to *accomplish or contribute to one or more of the following top-level goals*:

(a) An increase in our understanding of the likely occurrence of marine mammal species in the vicinity of the action, i.e., presence, abundance, distribution, and/or density of species.

(b) An increase in our understanding of the nature, scope, or context of the likely exposure of marine mammal species to any of the potential stressor(s) associated with the action (e.g., sound, explosive detonation, or expended materials), through better understanding of one or more of the following: 1) the action itself and its environment (e.g., sound source characterization, propagation, and ambient noise levels); 2) the affected species (e.g., life history or dive patterns); 3) the likely co-occurrence of marine mammal species with the action (in whole or part) associated with specific adverse effects, and/or; 4) the likely biological or behavioral context of exposure to the stressor for the marine mammal (e.g., age class of exposed animals or known pupping, calving or feeding areas).

(c) An increase in our understanding of how individual marine mammals respond (behaviorally or physiologically) to the specific stressors associated with the action (in specific contexts, where possible, e.g., at what distance or received level).

(d) An increase in our understanding of how anticipated individual responses, to individual stressors or anticipated combinations of stressors, may impact either: 1) the long-term fitness and survival of an individual; or 2) the population, species, or stock (e.g., through effects on annual rates of recruitment or survival).

(e) An increase in our understanding of the effectiveness of mitigation and monitoring measures.

(f) A better understanding and record of the manner in which the authorized entity complies with the incidental take authorization and incidental take statement.

(g) An increase in the probability of detecting marine mammals (through improved technology or methodology), both specifically within the exclusion zone (thus allowing for more effective implementation of the mitigation) and in general, to better achieve the above goals.