

Marine Mammal Monitoring and Mitigation Plan

Ice Overflight Surveys Program in the Chukchi and Beaufort Seas



**Shell Gulf of Mexico Inc.
and
Shell Offshore Inc.**

December 2014

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INTRODUCTION

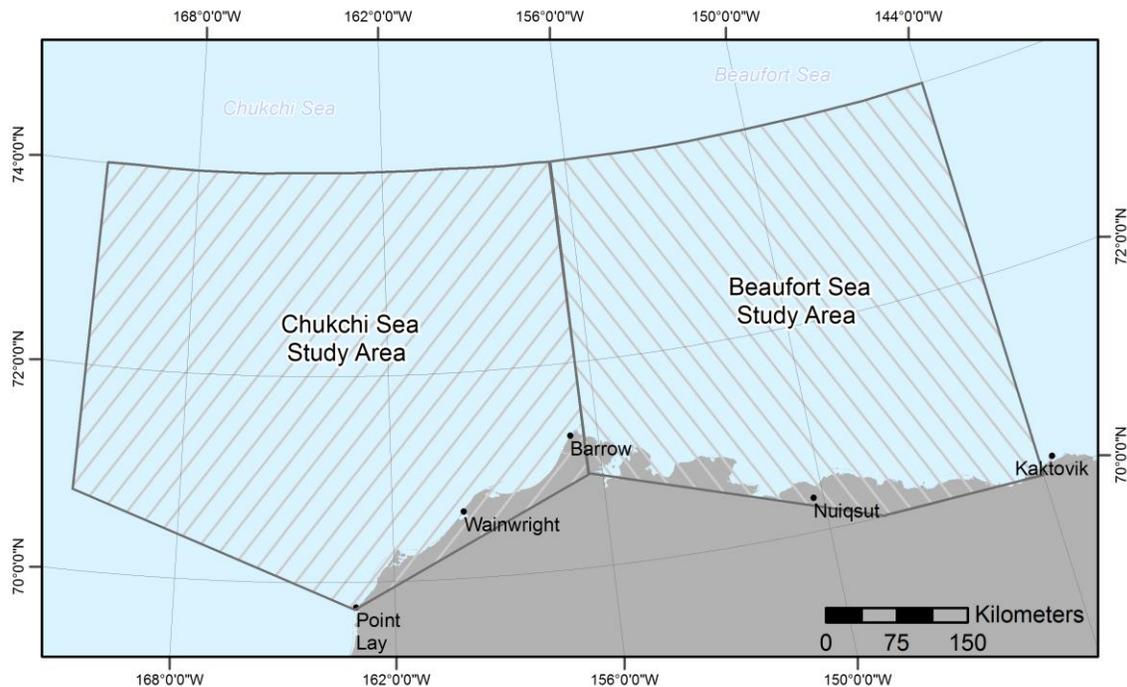
Shell Gulf of Mexico Inc. and Shell Offshore Inc., collectively (Shell) will conduct a Marine Mammal Monitoring and Mitigation Plan (4MP) for an ice overflight program in the Chukchi and Beaufort Seas. The 4MP developed for Shell's ice overflight program supports protection of the marine mammal resources and subsistence activities in the area, fulfills reporting obligations to the National Marine Fisheries Service (NMFS), and the U.S. Fish and Wildlife Service (USFWS), and establishes a means for gathering additional data on marine mammals for future planning. The proposed study areas are shown in Figure 1.

The proposed ice overflight program will be operated in several intermittent stages beginning in May of 2015 and concluding at the end of April 2016. Approximately 14 surveys will be flown in total during this period using a combination of fixed-wing aircraft and helicopters. Flight altitudes for fixed wing surveys will mostly be at or above 152 m and range from 30 to 610 m. For helicopter flights, the altitude will mostly be at or above 61 m with a range of 15 to 152 m. Helicopter landings will be conducted on ~four occasions to more closely investigate areas of interest noted during fixed wing surveys.

Shell's 4MP is a combination of active monitoring of the area of operations and the implementation of mitigation measures designed to minimize project impacts to marine resources and subsistence activities. Monitoring will provide information on the numbers of marine mammals potentially affected by the overflight program and will facilitate real time mitigation to prevent disturbance of marine mammals by aircraft sound or presence. The majority of flight activity will be conducted either during winter when nearly 10/10 ice coverage is present, or during spring when sea ice also pre-dominates the study area. Flight time over open water and adjacent ice edges will be limited as a mitigation measure to minimize the potential disturbance of cetaceans in open water.

The goals of the 4MP will be accomplished in part by a protected species observer (PSO) present on the aircraft collecting data and enacting mitigation when necessary, and these data will be used to interpret potential reactions of marine mammals in the presence of aircraft and in subsistence use areas closer to shore. A detailed report will be issued to NMFS following the end of the ice overflight survey program. Additionally, Shell will continue to engage with local communities to ensure ice overflights do not conflict with subsistence activities.

FIGURE 1. Chukchi and Beaufort Seas Study Areas for Shell’s Proposed Ice Overflight Survey Program, May 2015 through April 2016.



PROTECTED SPECIES OBSERVERS

Aerial monitoring for marine mammals will be conducted by a trained PSO aboard each flight to comply with expected provisions in the IHA that Shell receives. PSO duties will include watching for and identifying marine mammals, recording their numbers, distances from, and potential reactions to the presence of the aircraft, in addition to working with the helicopter pilots to identify areas for landings on ice that is clear of marine mammals.

Observer Qualifications and Training

Observers will have previous marine mammal observation experience in the Chukchi and Beaufort Seas. All observers will be trained and familiar with the marine mammals of the area, data collection protocols, reporting procedures, and required mitigation measures.

Specialized Field Equipment

The following specialized field equipment for use by the onboard PSO: Fujinon 7 X 50 binoculars for visual monitoring, a GPS unit to document the route of each ice overflight, a laptop computer for data entry, a voice recorder to capture detailed observations and data for post flight entry into the computer, and digital still cameras.

Field Data-Recording

The observer on the aircraft will record observations directly into computers using a custom software package. The accuracy of the data entry will be verified in the field by computerized validity checks as the data are entered, and by subsequent manual checking following the flight. Additionally, observers will capture the details of sightings and other observations with a voice recorder, which will maximize observation time and the collection of data. These procedures will allow initial summaries of data to be prepared during and shortly after the surveys, and will facilitate transfer of the data to statistical, graphical or other programs for further processing.

During the course of the flights, the observer will record information for each sighting including number of individuals, approximate age (when possible to determine), and any type of potential reaction to the aircraft. Environmental information the observer will record includes weather, air temperature, cloud and ice cover, visibility conditions, and wind speed.

REPORTING

The results of the ice overflight surveys will be presented in a 90-day report. Reporting will address the requirements established by NMFS in the IHA, including:

- Summaries of monitoring effort: total hours, total distances flown, and environmental conditions during surveys;
- Summaries of occurrence, species composition, and distribution of all marine mammal sightings including date, numbers, age/size/gender categories (when discernible), group sizes, ice cover and other environmental variables; data will be visualized by plotting sightings relative to the position of the aircraft; and
- Analyses of the potential effects of ice overflights on marine mammals and the number of individuals that may have been disturbed by aircraft.

MITIGATION

Fixed wing and helicopter flights over ice at survey altitudes have the potential to disturb pinnipeds and polar bears on ice and any marine mammals in the water. As noted above, the majority of flight activity will be conducted either during winter when nearly 10/10 ice coverage is present, or during spring when sea ice also pre-dominates the study area. Flight time over open water and adjacent ice edges will be limited as a mitigation measure to minimize the potential disturbance of cetaceans in open water. Shell's planned ice overflight program incorporates operational procedures for minimizing potential impacts on marine mammals and on subsistence hunts.

The potential disturbance of marine mammals and subsistence activities from aircraft will be minimized further through the implementation of several mitigation measures if mitigation becomes necessary:

- The aircraft will maintain a 1 mi radius when flying over areas where seals appear to be concentrated in groups of ≥ 5 individuals;
- The aircraft will not land on ice within 0.5 mi of hauled out pinnipeds or polar bears;
- The aircraft will avoid flying over polynyas and along adjacent ice margins as much as possible to minimize potential disturbance to cetaceans; and
- Shell will routinely engage with local communities and subsistence groups to ensure no disturbance of whaling or other subsistence activities.

COMMUNICATIONS WITH ALASKA NATIVE COMMUNITIES

Communities have voiced concern that industrial activities may negatively impact their ability to harvest marine mammals. Shell continues to maintain an open and transparent process with all stakeholders throughout the duration of exploration and related activities in the Chukchi and Beaufort Seas. Alaska Natives hunt bowhead whales and other marine mammal resources during the spring. Shell will also inform subsistence users of the proposed ice overflight survey activities and obtain feedback from subsistence users and community members.