

more than negligible impacts over longer time periods.

Response: Under section 101(a)(5)(D) of the MMPA, an applicant is responsible for conducting a monitoring program to provide information on whether its activity is having more than a negligible impact on affected species and stocks of marine mammals. There is no requirement for conducting monitoring to determine whether all activities in the Beaufort Sea might some day have a significant cumulative impact on marine mammals, a term recognized under the National Environmental Policy Act (NEPA).

As required by regulations and MMPA, on October 30, 2002, CPA's proposed monitoring plan was peer-reviewed and accepted by the participants at the peer-review workshop held in Anchorage, AK (Angliss (ed), 2002). This workshop was the fourth in recent years to discuss impacts of on-ice activities on marine mammals. At this meeting, NMFS recommended that the industry set up a research fund through an independent organization, such as the National Fish and Wildlife Federation or NOAA Sea Grant. A competitive process for directed funds might encourage marine mammal scientists to develop creative ways to get a better handle on site-specific and cumulative impacts on seals resulting from winter-time activities. The industry suggested that this should be a cooperative undertaking between government and industry. Participants indicated that they would continue to discuss this concept at future meetings.

It should be recognized that research and monitoring of Beaufort Sea marine mammals are also conducted by government agencies, or through government agency funding. This includes, for example, MMS' aerial bowhead whale surveys, an annual population assessment survey for bowhead whales, a study on contaminant levels in bowhead whale tissue, and a bowhead whale health assessment study. These latter three studies are funded by or through NMFS. Information on these projects has been provided in the past to the MMC by NMFS. Based on this multi-faceted monitoring program, NMFS has determined that the monitoring programs for both open-water and wintertime are adequate to identify impacts on marine mammals, both singly from the project and cumulatively throughout the industry.

Comment 10: The MMC believes that important types of long-term information should be gathered as part of the required monitoring plan

including data on potential changes in density and abundance of potentially affected marine mammals, reproductive rates, foraging patterns, distribution, and contamination levels where oil and gas exploration, development, and production occurs.

Response: See response to comment 7. NMFS would welcome the participation of the MMC and/or its scientific advisors at its twice-annual peer-review meetings held to discuss monitoring proposed to be undertaken by Arctic-activity applicants for authorizations under section 101(a)(5) of the MMPA. In addition, NMFS would welcome suggestions from the MMC on future methodology to economically assess the suggested parameters for ice-seals during the Arctic winter.

Description of Habitat and Marine Mammals Affected by the Activity

A detailed description of the Beaufort Sea ecosystem can be found in several documents (Corps of Engineers, 1999; NMFS, 1999; Minerals Management Service (MMS), 1992, 1996, 2001) and is not repeated here.

Marine Mammals

The Beaufort/Chukchi Seas support a diverse assemblage of marine mammals, including bowhead whales (*Balaena mysticetus*), gray whales (*Eschrichtius robustus*), beluga (*Delphinapterus leucas*), ringed seals, spotted seals (*Phoca largha*) and bearded seals. Descriptions of the biology and distribution of these species and of others can be found in NMFS (1998, 1999), Western Geophysical (2000) and several other documents (Corps of Engineers, 1999; Lentfer, 1988; MMS, 1992, 1996; Angliss *et al.* (2001)). Angliss *et al.* (2001) is available online at: http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/sars.html#Stock_Assessment_Reports.

Ringed and, to a lesser degree, bearded seals could be affected by on-ice seismic activities. These species as well as other marine mammal species in the Beaufort Sea appear to have stable to increasing populations, which is a condition indicative of a healthy ecosystem. Polar bears, which prey on these species, are believed to be stable or increasing in numbers in the Beaufort Sea (U.S. Fish and Wildlife Service (USFWS), 2000 a, b). Similarly, the most recent estimate of bowhead whales shows the population has steadily increased annually at a growth rate of 3.2–3.3 percent to 9,860 (7,700–12,600) animals (International Whaling Commission, 2002). These increases are occurring in concert with subsistence harvest of these species including a 5–

year harvest quota of 255 bowheads. The status of these marine mammal populations reflects the high quality of the habitat, which supports abundant and diverse prey populations.

Ringed seals are year-round residents in the Beaufort Sea. They are the most abundant and widely distributed species of marine mammal in the Beaufort Sea (Frost *et al.*, 1988). The world-wide population is estimated at 6 to 7 million (Stirling and Calvert, 1979). The Alaska stock of the Bering-Chukchi-Beaufort Sea area is roughly estimated at between 1 to 1.5 (Frost, 1985) to 3.3 to 3.6 million seals (Frost *et al.*, 1988). Although there are no recent population estimates in the Beaufort Sea, Bengston *et al.* (2000) estimated ringed seal abundance from Barrow south to Shismaref in a portion of the Chukchi Sea to be 245,048 animals from aerial surveys flown in 1999. In Angliss *et al.* (2001), marine mammal scientists state that there are at least that many ringed seals in the Beaufort Sea. Frost *et al.* (1999) reported that observed densities within the area of industrial activity along the Beaufort Sea coast were generally similar between 1985–87 and 1996–98, suggesting that the regional population has been relatively stable during this 13-year period of industrial activity.

During winter and spring, ringed seals inhabit landfast ice and offshore pack ice. Seal densities are highest on stable landfast ice but significant numbers of ringed seals also occur in pack ice (Wiig *et al.*, 1999). Seals congregate at holes and along cracks or deformations in the ice (Frost *et al.*, 1999). Breathing holes are established in landfast ice as the ice forms in autumn and maintained by seals throughout the winter. Adult ringed seals maintain an average of 3.4 holes per seal (Hammill and Smith, 1989). Some holes may be abandoned as winter advances, probably in order for seals to conserve energy by maintaining fewer holes (Brueggeman and Grialou, 2001). As snow accumulates, ringed seals excavate lairs in snowdrifts surrounding their breathing holes, which they use for resting and for the birth and nursing of their single pups in late March to May (McLaren, 1958; Smith and Stirling, 1975; Kelly and Quakenbush, 1990). Pups have been observed to enter the water, dive to over 10 m (32.8 ft), and return to the lair as early as 10 days after birth (Brendan Kelly, personal communication, June 2002), suggesting pups can survive the cold water temperatures at a very early age. Mating occurs in late April and May. From mid-May through July, ringed seals haul out in the open air at