

walrus. The response of walrus to sound sources may be either avoidance or tolerance. In one instance, prior to the initiation of incidental take regulations, walrus that tolerated noises produced by Industry activities were intentionally harassed to protect them from more serious injury. Shell Western E & P Inc. encountered several walrus close to the drillship during offshore drilling operations in the eastern Chukchi Sea in 1989. On more than one occasion, one walrus actually entered the "moon pool" of the drillship. Eventually, the walrus had to be removed from the ship for its own safety.

*A. Stationary Sources*—It is highly improbable that noise from stationary sources would impact many walrus. Currently, Endicott, the saltwater treatment plant, and Northstar, are the only offshore facilities that could produce noise that has the potential to disturb walrus. Although walrus are rare in the vicinity of these facilities, one walrus hauled out on Northstar Island in the fall of 2001.

*B. Mobile Sources*—Open-water seismic exploration produces underwater sounds, typically with airgun arrays, that may be audible numerous kilometers from the source. Such exploration activities could potentially disturb walrus at varying ranges. In addition, source levels are thought to be high enough to cause hearing damage in pinnipeds that are in close proximity to the sound. It is likely that walrus hearing and sensitivities are similar to pinnipeds at close range, and therefore, it is possible that walrus within the 190 dB re 1  $\mu$ Pa safety radius of seismic activities (industry standard) could suffer temporary threshold shift; however, the use of acoustic safety radii and monitoring programs are designed to ensure that marine mammals are not exposed to potentially harmful noise levels. Previous open-water seismic exploration has been conducted in nearshore ice-free areas. It is highly unlikely that walrus will be present in these areas, and therefore, it is not expected that seismic exploration would disturb many walrus.

*C. Vessel Traffic*—Noise produced by routine vessel traffic could potentially disturb walrus. However, walrus densities are highest along the edge of the pack ice, and Industry vessel traffic typically avoids these areas. The reaction of walrus to vessel traffic is highly dependent on distance, vessel speed, as well as previous exposure to hunting. Walrus in the water appear to be less readily disturbed by vessels than walrus hauled out on land or ice. In addition, barges and vessels associated with Industry activities will not

typically travel near large ice floes or land where walrus could potentially be found. Thus, vessel activities are likely to impact at most a few walrus.

*D. Aircraft Traffic*—Aircraft overflights may disturb walrus; however, most aircraft traffic is in nearshore areas, where there are typically few to no walrus. Reactions to aircraft vary with range, aircraft type, and flight pattern, as well as walrus age, sex, and group size. Adult females, calves, and immature walrus tend to be more sensitive to aircraft disturbance.

## 2. Physical Obstructions

Based on known walrus distribution and numbers in the Beaufort Sea near Prudhoe Bay, it is unlikely that walrus movements would be displaced by offshore stationary facilities, such as the Northstar or Endicott, or vessel traffic. There was no indication that the walrus, that used Northstar Island as a haulout in 2001 was displaced from its movements. Vessel traffic could temporarily interrupt the movement of walrus, or displace some animals when vessels pass through an area. This displacement would probably be short-term and would last no more than a few hours at most.

## 3. Contact With Releases of Oil or Waste Products

The potential releases of oil and waste products associated with oil and gas exploration and production during the open-water season and the associated potential to disturb walrus and polar bears are discussed following the polar bear discussion in this section.

### *Polar Bear*

Oil and gas activities could impact polar bears in various ways during both open-water and ice-covered seasons. These impacts could result from the following: (1) Noise from stationary operations, construction activities, vehicle traffic, vessel traffic, aircraft traffic, and geophysical and geological exploration activities; (2) physical obstruction, such as a causeway or an artificial island; (3) human/animal encounters; and (4) oil spills or contact with hazardous materials or production wastes.

### 1. Noise Disturbance

Noise produced by Industry activities during the open-water and ice-covered seasons could potentially result in takes of polar bears. During the ice-covered season, denning female bears, as well as mobile, non-denning bears, could be exposed to oil and gas activities and potentially affected in different ways. The best available scientific information

indicates that female polar bears entering dens, or females in dens with cubs, are thought to be more sensitive than other age and sex groups to noises.

Noise disturbance can originate from either stationary or mobile sources. Stationary sources include: construction, maintenance, repair, and remediation activities; operations at production facilities; flaring excess gas; and drilling operations from either onshore or offshore facilities. Mobile sources include: vessel and aircraft traffic; open-water seismic exploration; winter vibroseis programs; geotechnical surveys; ice road construction and associated vehicle traffic; drilling; dredging; and ice-breaking vessels.

*A. Stationary Sources*—All production facilities on the North Slope in the area to be covered by this rulemaking are currently located within the landfast ice zone. Typically, most polar bears occur in the active ice zone, far offshore, hunting throughout the year; although some bears also spend a limited amount of time on land, coming ashore to feed, den, or move to other areas. At times, usually during the fall season when the ice edge is near shore and then quickly retreats northward, bears may remain along the coast or on barrier islands for several weeks until the ice returns. During this time of year, the potential for human/bear encounters can increase. Polar bear interaction plans and employee training serve to reduce the number of encounters and the need for deliberately harassing bears.

During the ice-covered season, noise and vibration from Industry facilities may deter females from denning in the surrounding area, even though polar bears have been known to den in close proximity to industrial activities. In 1991, two maternity dens were located on the south shore of a barrier island within 2.8 km (1.7 mi) of a production facility. Recently, industrial activities were initiated while two polar bears denned close to the activities. During the ice-covered seasons of 2000–2001 and 2001–2002 active, known dens were located within approximately 0.4 km and 0.8 km (0.25 mi and 0.5 mi) of remediation activities on Flaxman Island without any observed impact to the polar bears. Other observations indicate some dens may have been vacated due to exposure to human disturbance.

Noise produced by stationary Industry activities could elicit several different responses in polar bears. The noise may act as a deterrent to bears entering the area, or the noise could potentially attract bears. Attracting bears to these facilities could result in a human/bear