

of the earth as they travel in it and may be reflected, refracted, diffracted or transmitted when they reach a boundary represented by an acoustic impedance contrast.

The basic components of a seismic survey include an energy source (either acoustic or vibratory), which generates a seismic signal; hydrophones or geophones, which receive the reflected signal; and electronic equipment to amplify and record the signal. The number and placement of sensors, the energy sources, the spacing and placement of energy input locations, and the specific techniques of recording reflected energy are broadly grouped as "parameters" of a given exploration program.

In modern reflection seismology, many sensors are used to record each energy input event. The number of sensors in use for each event varies widely according to the type of survey being conducted and the recording equipment available. Common numbers of groups of sensors are 240, 480, and 1040, and some new recording instruments may use as many as 4000 groups of sensors at the same time. The sensors are normally placed in one or more long lines at specified intervals. In North America the common group placement intervals are multiples of 55 ft (17 m), 110 ft (33.5 m) and 220 ft (67 m).

Vibroseis

Vibroseis seismic operations use large trucks with vibrators that systematically put variable frequency energy into the earth. At least 1.2 m (4 ft) of sea ice is required to support heavy vehicles used to transport equipment offshore for exploration activities. These ice conditions generally exist from 1 January until 31 May in the Beaufort Sea. The exploration techniques are most commonly used on landfast ice, but they can be used in areas of stable offshore ice. Several vehicles are normally associated with a typical vibroseis operation. One or two vehicles with survey crews move ahead of the operation and mark the energy input points. Crews with rubber-tire or rubber-track vehicles often require trail clearance with bulldozers for adequate access to and within the site. Crews with rubber-tracked vehicles are typically limited by heavy snow cover, and may require trail clearance beforehand.

A typical wintertime exploration seismic crew consists of 40–110 personnel. Roughly 75 percent of the personnel routinely work on the active seismic crew, with approximately 50 percent of those working in vehicles and

the remainder outside laying and retrieving geophones and cable. A camp unit is usually associated with a seismic survey project and will consist of 4–5 sleeper/office trailers, a kitchen/diner trailer, two shop/generator trailers, fuel sleighs and a small survival trailer (BP, 1997). Camp trailers are usually mounted on wide-pad sleighs. It is common to survey and plow "communication" roads on sea ice for vehicles to travel to and from the camp.

With the vibroseis technique, activity on the surveyed seismic line begins with the placement of sensors. All sensors are connected to the recording vehicle by multi-pair cable sections. The vibrators move to the beginning of the line, and recording begins. The vibrators move along a source line, which will be at some angle to a sensor line. The vibrators begin vibrating in synchrony via a simultaneous radio signal to all vehicles.

In a typical survey, each vibrator will vibrate four times at each location. The entire formation of vibrators subsequently moves forward to the next energy input point (e.g., 67 m (220 ft) in most applications) and repeat the process. In a typical 16- to 18-hour day, 4 to 10 linear mi (6 to 16 km) in 2D-seismic operations and 15 to 40 linear mi (24 to 64 km) in a 3D-seismic operation are conducted. A detailed description of the work proposed for 2003 is contained in this document and in the application which is available upon request (see ADDRESSES).

Summary of the Request

On October 3, 2002, CPA submitted an application to NMFS for an IHA for the taking of ringed seals (*Phoca hispida*) and bearded seals (*Erignathus barbatus*) for a period of 5 months beginning January 1 (upon the expiration of the existing regulations covering the Alaskan North Slope on 31 December 2002 (63 FR 5277, February 2, 1998)) and ending on about May 31, 2003. On-ice seismic operations are ordinarily confined to this 5-month period since this is the period when ice is sufficiently thick (4 - 5 ft; 1.2 - 1.5 m) to safely support the equipment.

The geographic region of activity in 2003 encompasses an 846-square mile (2,190 km²) area extending from approximately Cape Halkett on the west to Oliktok Point on the east and to approximately 4–20 nm (7.4 – 37 km) offshore the coast. Water depths in most (> 60 percent) of the area are less than 10 ft (3 m), but drop to 30 ft (9 m) along the northern fringe of the region of activity. Few seals inhabit water less than 10 ft (3 m) during winter, since water typically freezes to or near the

bottom at this depth or what water is available supports few food resources (Miller *et al.*, 1998 and Link *et al.*, 1999).

Comments and Responses

A notice of receipt of the application and proposed authorization was published on December 31, 2002 (67 FR 79565), and a 30-day public comment period was provided on the application and proposed authorization. Comments were received from the Marine Mammal Commission (MMC) and the Alaska Eskimo Whaling Commission (AEWC).

Comment 1: The AEWC disagrees with NMFS' statement in its notice of receipt and proposed authorization that Nuiqsut hunters are most likely to take ringed seals during the open water season. The AEWC notes that this conclusion is based on two studies and harvest data collected in one year, 1992. They state, "While many events, including the availability of seasonal construction work, may affect subsistence patterns from year to year, NMFS certainly is aware of the fact that subsistence hunting is an opportunistic activity. Ignoring this fact for even a seemingly low impact activity sets a dangerous precedent for subsistence hunters."

Response: NMFS is required to incorporate the best scientific and commercial information (including traditional knowledge) currently available when making a determination that an activity will not have more than a negligible impact on affected marine mammal species nor have an unmitigable adverse impact on subsistence needs for marine mammals. In 50 CFR 216.103, NMFS provides its definition for what is an "unmitigable adverse impact."

The study cited by NMFS in the **Federal Register** and by the commenter was a 1996 analysis conducted by the North Slope Borough (NSB), presumably based on 1992 harvest data. While this is only a single year of harvest data, that information is consistent with previous statements made by NMFS as several small take applicants for wintertime activities in the Beaufort Sea have provided subsistence harvest data used by NMFS in previous authorizations (NMFS, 1998; 62 FR 5564 (October 27, 1997), and this document). NMFS would therefore appreciate any updated information for use in future small take authorizations.

Comment 2: The AEWC recommends a reasonable mitigation measure. As NMFS notes, the Nuiqsut hunters take ringed seals primarily in the Colville River Delta. As more daylight becomes available during the spring, subsistence