Honorable Frank Murkowski
Chairman, Committee on Energy
and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

Thank you for your letter of May 15, 2001. The questions in your letter are presented in bold below, followed by our responding information.

1. What is the Porcupine Caribou Herd's historic calving range?

The historic calving range of the PCH extends across the arctic coastal plain, foothills, and northern mountain valleys from the Canning River on the west (in the Arctic NWR, Alaska) to the Babbage-Blow River region to the east and south (in Canada). Figure 1 shows calving distributions as determined during aerial calving grounds surveys done before 1982 (Skoog 1963, Clough et al. 1987). Figure 2 shows the extent of calving during 1983 - 2000. When viewed together, these two figures provide a picture of historic range use.

2. Are there portions of the 1002 Area where core calving does not historically occur?

Figures 1 and 2 show core or concentrated calving areas for the PCH. According to historic records, calving concentrations have not occurred on a relatively small portion (Canning delta and northern coastal margin) of the Arctic Refuge "1002 Area." Portions of the eastern segment of the Central Arctic Herd use the Canning River delta area for calving. There have been PCH calving concentrations within the 1002 Area for 27 of 30 years. Calving and the early summer seasons (late May to early July) are the periods of greatest sensitivity of caribou (International Porcupine Caribou Board 1993). Figures 1 and 2 show distribution of calves at birth. Figure 3 provides a more complete representation of caribou use during the entire sensitive time period, including use of insect relief habitats by cows with young calves. Dense aggregations of the PCH frequently use the Canning River delta and coastal areas of the 1002 Area for insect relief habitat.

Calf survival is linked to forage quality and quantity and predator densities associated with selected calving habitats (Griffith et al. 2000, Whitten et al. 1992). Snow melt conditions and associated plant phenology vary annually. Therefore, caribou require free passage to these variable areas before giving birth, and maternal females with young must be able to freely move to optimal forage throughout the early summer season.

In years of late spring snow melt, more caribou may calve in Canada, the eastern portion of the historic calving range. Calf production and early survival of calves are lower during such years. In contrast, when snow melt is normal, most caribou give birth in the refuge coastal plain. For example, in 2000 calving was delayed, resulting in calving in Canada. Initial production of calves was 71 percent; the average is 80 percent. The July calf:cow ratio was 44:100; average is 60:100. In years when most calving occurs in Canada, the entire calving segment moves west into the 1002 Area during the second half of June where they gather with other segments (bulls, barren cows, yearlings) of the herd.

3. What has been the impact of development in Prudhoe Bay on the Central Arctic caribou herd?

Prudhoe Bay and most other operating oilfields on the Alaskan north slope are within the historic calving grounds of the Central Arctic Herd (Figure 4.) Scientists have documented effects of development on the use of calving habitats by females with new young and movement patterns following the calving period. During years of climatic stress (early 1990s), habitat alterations may have affected calf production and reproductive capacity of caribou (Cameron 1995). After the calving season, under periods of insect harassment, caribou groups (predominately bulls and cows without calves) periodically move into portions of the industrial zone.

When oil development first began on the north slope in the early 1970s, the Central Arctic Herd numbered about 5,000 (Cameron and Whitten 1979). During the late 1970s and 1980s, the herd grew quite rapidly to a population of about 23,000. During the early 1990s, the herd size declined to about 18,000, and then increased to its current level of 27,000 in the year 2000.

Calving within the industrial complex near Prudhoe Bay and Deadhorse essentially ceased by 1977 (Whitten and Cameron 1985), and dense networks of roads, pipelines, and production facilities blocked mid-summer caribou movements along the adjacent coast (Whitten and Cameron 1983). In the late 1970s, cows with young calves avoided the Trans Alaska Pipeline (Cameron et al. 1979). While these changes in habitat use were noted during the early phases of development, the herd continued to grow.

When development expanded into the Kuparuk area during the early1980s, industry worked to consolidate facilities and occupy less space. Separation of pipelines from roads and adequate elevation of pipes above the ground improved the caribous' ability to move more freely in relation to these expansion areas. However, notwithstanding these newer design features, cows with young calves were displaced from developed areas by four or more kilometers even when traffic was reduced (Dau and Cameron 1986, Cameron et al. 1992).

By the mid 1980s, caribou use of the Kuparuk and Milne fields during calving declined and the concentrated calving area shifted to the southwest, away from the industrial zone (Cameron et al. 1992, Wolfe 2000). This shift has continued through 2000 (Lawhead and Johnson 2000). Only sparse calving activity continues within less disturbed pockets of the oilfield areas (Lawhead and Johnson 2000). The relatively undisturbed eastern calving grounds of the Central Arctic Herd did not show any directional shift during the same time period (Wolfe 2000). The amount of forage available for cows at the time of peak lactation in the area of shifted calving concentration is lower than that for the area where caribou formerly calved. The amount of forage did not change significantly for the eastern calving concentration area, which was not affected by development (Figure 4).

During 1988 to 1994, when weather conditions were more severe, the calf birth rate in the western segment (affected by development) was 64 percent. The birth rate for the eastern segment (disturbance free) during the same period was 83 percent (Cameron 1995). Frequency of reproductive pauses (year that a female does not produce a calf) in the affected area was higher (36 percent) than for the disturbance-free segment (19 percent). During the early 1990s, calving habitat loss, summer movement disruptions and weather conditions apparently reduced summer nutrition and autumn body condition of females

sufficiently to influence breeding pauses and calf production. Since the mid 1990s, the size of the Central Arctic Herd has again increased, suggesting that density of displaced calving caribou has not exceeded critical levels at least for years when weather is less severe.

Calving habitat use patterns and summer movements likely will change further as oilfield infrastructure continues to expand, especially into the less disturbed habitat east of the Trans Alaska pipeline. The consequences at the population level are uncertain and very difficult to predict.

4. Over 1,000 miles of seismic exploration was conducted in the 1002 Area during the winters of 1984 and 1985. Concurrently, a well was drilled on Native lands over two winters in the area. Did this exploration have any negative impact on the Porcupine caribou herd?

No studies were conducted to determine the effects of the above activities on the PCH. Considering the scope and timing of the 2D seismic program of 1984 and 1985, and the KIC exploratory well, it is unlikely that there have been significant or direct effects to the PCH. This does not necessarily mean that future exploration activities would have the same consequences. Rather, these activities must be evaluated on a case by case basis.

11. Please provide a listing of National Wildlife Refuges where oil, gas or mineral activities are occurring or authorized.

See attached Table.

Sincerely,

Enclosures

cc: 7227 MIB-SRF, 6242 MIB-OCL, LLM 406 L Street, 5413 MIB-PMB, 6352 MIB-SOL, 4140 MIB-BIA, ESPM, 3156 MIB-FW, 670ARL-CNWR/DNWR, 670-HOLD, 3251 MIB-CNWR, RD-R7, 3012MIB-CCU, 3012MIB-DRF, 651ARL-NR, 600ARL-LLYON

FWS/CNWR-RF-WR:LYON:kdg:06/01/01:703-358-1744:G:/corres.pnd/2001/003356