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Marie Adams
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January 16, 1987

U.S. Fish & Wildlife Service
2343 Main Interior Bldg.
18th & C Streets, N.W.
Washington, D.C. 20240

ATTN: Division of Refuge Management

I am writing to let you know what my personal views are regarding the Arctic National Wildlife Refuge 1002(h) report. I work for the North Slope Borough and have followed this issue as public information officer under the office of Mayor George Ahmaogak. I attended the January 6, 1987 hearing on ANWR in Kaktovik.

After listening to everyone's comments I am in support of option B to permit limited leasing. I believe that any maternal grounds or calving grounds should be protected from disturbance. Also, one of the reasons I support option B is because of my background as a past Executive Director of the Alaska Eskimo Whaling Commission. Many of us involved with whaling have always said to explore and develop onshore oil and gas potential areas before going to offshore areas. I oppose the current Beaufort Sea Sale 97 which is along the migratory path of the bowhead whale currently listed as an endangered specie. Regarding ANWR, there is a lot of concern for 180,000 strong porcupine caribou herd. I would rather see exploration and development of oil and gas onshore before looking at offshore areas, where technology has been improved with the Prudhoe Bay experience. I do not believe technology for offshore arctic waters has been developed and the price for such activity is too great for our people who have to depend on subsistence resources.

P-1

One area which I strongly believe has been neglected in your 1002(h) report is coverage about what is going to happen to the local residents. The social impacts from Prudhoe Bay have been tremendous. We are now dealing with social problems never before experienced in the North because of the impact that the cash economy has on local people. We are facing alcohol and drug related disieases never before encountered by the Inupiat people in the Arctic Slope. We are a small population and studies should be done to enable our communities to at least obtain funding to deal with such impacts.

Thank you for this opportunity to comment.

Sincerely,

Marie Adams

Marie Adams

Jan 18, 1987
1724 Aspen
Ft. Collins, CO 80524

U.S. Fish and Wildlife Service
Attn.: Division of Refuge Management
2343 Main Interior Bldg.
18th and C Streets, NW
Washington DC 20240

Dear Sirs,

I am writing in regards to draft report 1002 for the Artic National Wildlife Refuge which was released on Nov. 24, 1986 by the U.S. Fish & Wildlife Service. I am very concerned about the Fish and Wildlife Service recommendation of full leasing of the entire costal plain and have the following comments:

1. Accidental oil spills are a known and inevitable risk of oil exploration. Since 1972 there have been 23,000 spills reported to the Alaska Department of Energy Conservation. More oil development just means more oil spills and we cannot afford any oil spills in Alaska's fragile environment.

2. The hazardous wastes produced in oil and gas production are another concern of mine. Where do you dispose/store such wastes in the North Slope? This needs to be addressed before more oil and gas drilling is done in that area.

P-2

3. What sorts of cumulative effects will oil and gas development in the Artic Refuge have on adjacent state and federal leases and offshore on the outer continental shelf?

4. Oil and gas exploration will have obvious negative effects on the more than 170,000 caribou that use that area as a calving ground and post-calving insect avoidance area. But what about the lesser known, irreversible effects such development will have on the soil, the insect life, the nutrient cycles, the plant life? The ecosystem needs to be considered as a whole when determining the consequences of oil and gas production. It has not been in this report.

5. Perhaps most importantly, I believe that the money and energy that would be poured into obtaining Artic Refuge oil and gas could be used 100% more effectively in energy conservation and education. Oil and gas supplies are a limited resource and will one day be economically outdated as a means of keeping our country running. It just doesn't make sense to me to keep despoiling America's premier wilderness areas - areas like the Artic Refuge - when known but untapped energy conservation methods are available for use right now.

In short, I believe that full scale oil and gas leasing in the Artic Refuge should not be considered as an option and urge you to consider less environmentally damaging and longer term solutions to our country's energy needs.

Sincerely,

Susan L Anderson

Joan B. Beattie
4380 Reka Drive
Anchorage, Alaska 99508

February 3, 1987

U.S. Fish and Wildlife Service
2343 Main Interior Buildling
18th and C Streets, N.W.
Washington, D.C. 20240

Dear Sir,

The 1002 area of the Arctic National Wildlife Refuge should remain wilderness. I support Alternative E, which recommends wilderness designation for the entire Arctic Refuge coastal plain.

I was disappointed that the 1002 report failed to address the cumulative effects of oil and gas development, not only within the 1002 area, but also between the 1002 area and adjacent state and federal lease areas on the north slope and outer continental shelf. The impacts of oil and gas development on a single site may be insignificant, but when viewed in concert with the host of other development sites, the impacts add up. P-3

I am deeply concerned that the 1002 report also failed to adequately address how hazardous wastes will be dealt with and how sufficient water will be obtained and water quality standards not compromised.

I urge the Secretary to reconsider this unwise decision and to recommend the 1002 area for designation as wilderness in his final report.

Sincerely yours,

Joan B. Beattie

Joan B. Beattie

January 28, 1987.

UNIVERSITY OF VICTORIA

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Director
Fish and Wildlife Service
Division of Refuges
U.S. Dept. of Interior
Room 2343
Main Interior Building
18th and C Street
Washington, D.C.
20240

Dear Sir,

P-4

As an interested caribou biologist, I wish to submit the enclosed brief relative to the impacts of full oil leasing of the 1002 lands in Alaska on the Porcupine Caribou Herd.

Yours truly,

A. T. Bergerud

Dr. A. T. Bergerud
Biology Dept.
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AN ASSESSMENT OF PETROLEUM DEVELOPMENT ON THE STATUS OF THE PORCUPINE HERD

by

DR. A. T. BERGERUD

Professor of Biology, University of Victoria, Victoria, B.C. Canada. V8W 2Y2

The U.S. Federal government has proposed that the 1002 lands of the Arctic Coastal Plain and in the Arctic National Wildlife Refuge, Alaska, be opened for exploration and full leasing for petroleum supplies. Included within the 1002 proposed lease area are 242,000 acres of 311,000 acres (78%) of the core calving area of the Porcupine Herd (core defined as areas used in $\geq$ 5 of 14 years) and 934,000 acres of 2,117,000 acres (45%) of concentrated calving area of the herd (areas with $\geq$ 50 animals/ mi^2). Also included in the 1002 area is the habitat where nearly the entire herd, now estimated at 18,000 animals, masses in early July to seek relief from mosquitoes. The herd leaves the 1002 area in mid to late July and does not return until the following May. I have been asked as a caribou biologist, by AOGA, to evaluate the impact of full leasing and development on the viability of the herd and specifically to critique the environmental impact statement prepared by the Fish and Wildlife Service on the proposed full leasing and development.

P-5

Background Theoretical Considerations

The environment of the caribou (Rangifer tarandus) can be segregated into: other animals, a place in which to live, food and weather (Fig. 1, Andrewartha and Birch 1954). The interactions of caribou with insects, open habitats, food and weather represent variable contingencies that result in facultative responses by caribou that can be modified relative to disturbance factors (Fig. 1). The interactions of caribou with other caribou and with wolves in open environments are consistent contingencies affecting reproductive fitness - these are obligatory responses that will respond to change very slowly, if at all, when habitats are modified.

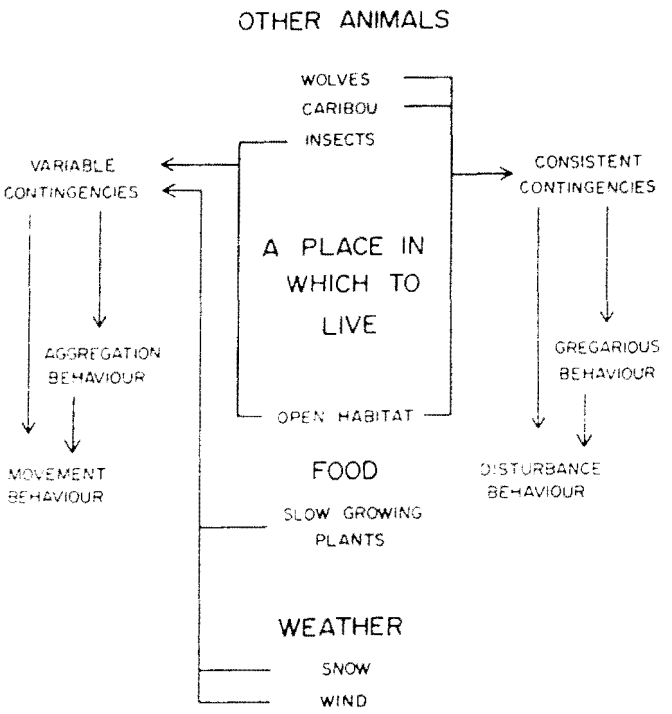


Figure 1. Diagram of the proposed manner in which the four components of the environment interact as variable and consistent contingencies in the development of movement, aggregation, gregarious and disturbance behaviour of caribou (Bergerud 1974b).

I feel that the major behavioral responses of caribou in the 1002 area are the insect x weather facultative responses and the predator x habitat obligatory responses. Unlike many biologists, I do not feel that food is a major factor in the calving and massing of caribou in June and July in the 1002 area.

Are Caribou Wilderness Animals?

Much of the concern for the well-being of caribou arises from the view that caribou are wilderness animals that cannot adapt to coinhabiting ranges with man. This concept has arisen, in part, because caribou are found on ranges far removed from major developments. Also, caribou herds have declined on the southern edge of their range as settlement proceeded (Cringan 1956). Thirdly, caribou are unwary and easily over-exploited. And lastly, caribou utilize slow-growing lichens that are many years in recovering following forest fires.

However, a closer examination of these facts suggests that they are not sufficient to define caribou as wilderness animals nor to imply that loss of wilderness per se will bring about the demise of herds. Obviously, mule deer (Odocoileus hemionus) and antelope (Antilocapra americana) were once far removed from European man in the 1700's, but they are not called wilderness animals today; they have adapted. The decline of caribou along their southern boundary was due to increased predation from man and natural predators, as well as from disease contracted from white-tailed deer (Odocoileus virginianus) (Bergerud 1974a) and not from outright habitat alteration. There is no evidence that herds abandonned their annual ranges because of an intrinsic aversion to man or man-made

structures. The nomadic life style of caribou and its propensity for shifting habitats makes it as adaptable to short term habitat alterations as it is to the slow succession of lichen following natural fires and regeneration cycles. The unwary nature of caribou means that they can coinhabit range with man if not overhunted. In fact, reindeer (Rangifer tarandus) are an important domestic animal in Eurasia. Several caribou researchers have noted that caribou are both highly adapted and adaptable (Skoog 1968, Bergerud 1974b, Roby 1978, Skogland, pers. comm.).

Resource-Limited by Food?

Another basic philosophy that influences how some caribou biologists view the impacts of development on caribou is the closely held belief that the carrying capacity of the habitat for caribou is determined by food resources, the slow growing lichens in winter, and green plants in the summer. It follows from this belief that if caribou are displaced by development and lose part of their range, then the potential carrying capacity is reduced. Another concern is that, if the animals are at a carrying capacity limited by food, then additional disturbance may stress the animals, thereby reducing reproductive rates and increasing mortality rates. A further refinement is that caribou select their calving grounds to maximize the quantity and quality of the diet - to optimally forage (Kuropat and Bryant 1980). Hence displacement from the calving areas should adversely affect the herd.

As an example of this type of thinking, Whitten and Cameron (Arctic (1984:293) said, speaking of developmental impacts, "For example, a series of mild winters might compensate for the negative effects of harassment or

habitat loss." Bergerud, Jakimchuk and Carruthers replied (Arctic 1984:295) "The supposition advanced by Whitten and Cameron...assumes:

(1) that winter conditions limit caribou numbers (this has never been substantiated in mainland North America);

(2) that harassment results in caribou mortality - never substantiated and the extreme case (Pot Hill data) given in our paper represents the best available contrary evidence pertaining to this assumption;

(3) that habitat loss (unspecified) has governed caribou numbers (greater evidence for the opposite case is available in the literature);

(4) that ranges are at carrying capacity - which is not the case for any of the herds we discussed;

(5) finally, that the supposition has some basis in fact. However, this supposition has never been researched."

Such a seemingly innocuous statement, as made by Whitten and Cameron, reveals a basic philosopy of food limitation, and is the cornerstone of many dire predictions of caribou demise with development.

But in fact, the carrying capacity of this herd is not limited by winter food supplies. The dynamics of the Porcupine Herd were modelled in a workshop at the University of British Columbia in 1978. The herd then numbered 110,000. The simulation model indicated that the herd was not limited by winter food supplies. Food would not be limiting until the herd reached about one million animals. The simulation even indicated that if no animals crossed the Dempster Highway and the entire range east of the road in the Ogilvie Mts was lost, the herd could still prosper if food resources were the only consideration. The same simulation, however,

indicated that the herd would be limited by wolf predation at densities far below those imposed by food resources (Walters et al. 1979).

Both reproductive and natural mortality rates of caribou are little affected by winter food supplies. Fecundity is relatively fixed at 1 calf/female/year for females $\geq$ 3 years-of-age regardless of densities (Bergerud 1971, Skogland 1986). Skogland provided an equation for recruitment for females $\geq$ 1 year in Norway, where there are few predators, where $R = 0.65 - 0.012\ Dw - 0.00013\ Dw^2$ where Dw = caribou/km^2. Even at a density of 10 caribou/km^2 of winter range, recruitment would equal 52 yearlings/100 females. At a density of 10 animals/km^2 the Porcupine Herd would number 1,800,000 animals; and even this density would not hold since this many caribou would have greatly expanded their range.

In North America, in herds coexisting with wolves, recruitment is commonly less than 25 yearlings/100 females and yet densities seldom exceed 2 caribou/km^2 (Bergerud 1980). This disparity in densities and recruitment between Norway and North America is due to predation in North America. Predation limits populations far below that provided by food supplies (Bergerud et al. 1983).

Carrying capacity has been defined as that point where recruitment = natural mortality (Caughley 1977). For caribou on mainland North America the carrying capacity is determined by the abundance of predators (Bergerud and Elliot 1986). Recruitment equalled natural mortality for 22 herds at 6.5 wolves/1000 km^2 (Bergerud and Elliot 1986) regardless of the density of caribou on the winter range.

Long Term vs. Short Term, Individual vs. Herd

Bergerud, Jakimchuk and Carruthers (1984) reviewed the demography of 8 herds relative to disturbance by human activities. They concluded that the major impacts were (1) the building of transportation corridors that permitted increased human harvests of caribou and (2) the improvement in calf survival when wolves were reduced. Caribou herds continued to cross roads, and herds such as those in Newfoundland, still prospered when habitats were altered by logging and flooding. The Central Arctic Herd in Alaska increased from about 5,000 to 13,000 (early 1970's to 1984) despite the Prudhoe Bay oil field.

The conclusions of Bergerud et al. (1984) were debated in letters to the editor by Whitten and Cameron (Arctic 1984:293), Klein and White (Arctic 1984:293-294) and Miller and Gunn (Arctic 1985:154-155). Rebuttals to all letters were provided by Bergerud and Jakimchuk (Arctic 1984:294-295, Arctic 1985:155-156). Klein and White agreed that the herds were increasing but thought that disturbance must be viewed on a long term basis. But this is a nonsequitur - if there are no effects of disturbance for a short term, how are they significant on a long term? The long term is the addition of short term intervals. Miller and Gunn agreed that the herds were increasing but stated that disturbance must be viewed on the basis of the individual, not the herd. Again, this is a nonsequitur - since individuals comprise herds, if the herds are prospering, then the individuals are also faring well.

Now, there are new arguments that the prosperity of the Central Arctic Herd in the face of development cannot be used to gauge the success of the Porcupine Herd when faced with similar development and the question

is, why not? The Central Arctic Herd spends its entire annual cycle quite close to the development zone - the Porcupine Herd spends only two months. All the animals now alive in the Central Arctic Herd have been born since development commenced; they have adapted. The basic reason that some biologists cannot accept that caribou can cope with development is their ingrained views that caribou are "wilderness animals" and that food supplies are limiting. The new research work planned for the Porcupine by the Alaska Fish and Game is proceeding on this basis. Now caribou will be radio-tracked by satellites and energy budgets calculated daily, perhaps hourly. It all flows from the unsupported belief that nutrients and energy will ultimately limit total numbers of caribou in this herd.

Biology of Calving and Aggregating Behavior

Before we can evaluate the potential impacts of development on the Porcupine Herd we must determine why the animals use the Coastal Plain in the 1002 area for calving and grouping after calving. Basically, what are the environmental factors that determine where caribou locate their calving grounds?

The calving grounds of the migratory herds in the Holarctic are usually located on the northern distribution of the herd's range in tundra habitats (Appendix I:Fig. 1). The cows leave the bulls and commence migration towards these areas generally in April before green plants appear. Some herds migrate northeast, others northwest, and two herds south of Hudson Bay even migrate east. The consistent factor in all these migrations is that cows cross the tree-line at right angles

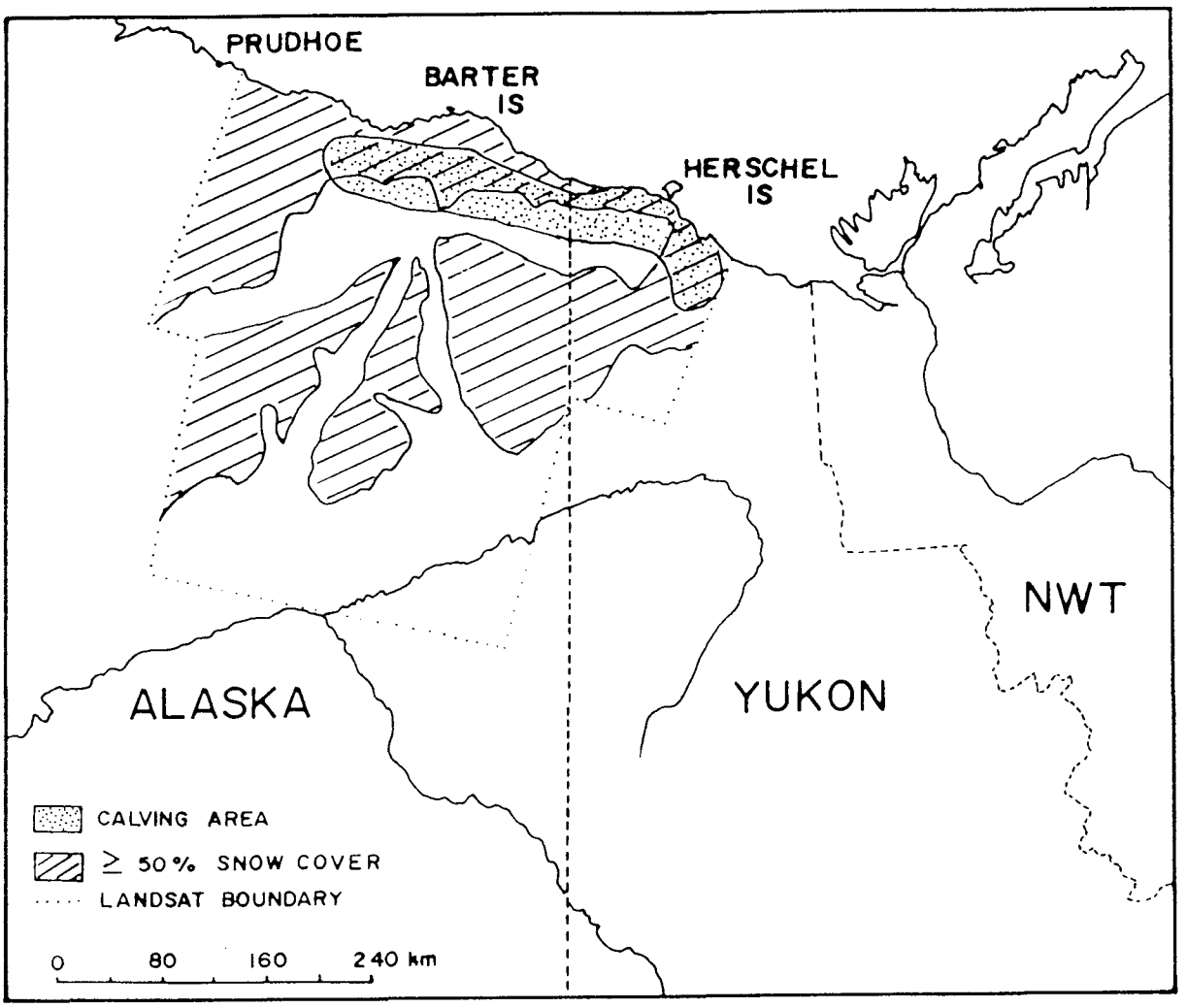
(Appendix I:Fig. 1) Wolves in North America generally den near tree line (Appendix II). By migrating at right angles to the tree line the cows can maximize their distance from wolves, with the least effort. Caribou cows migrate and calve on the bleak inhospitable arctic tundra to reduce contact with wolves (Appendix II) and there are very few wolves on the calving grounds of the Porcupine Herd.

An alternative hypothesis is that caribou seek their northern tundra calving grounds to optimally forage, primarily on Eriophorum angustifolium (Kuropat and Bryant 1980). I was able to disprove this hypothesis in 1984 by comparing the nitrogen in fecal droppings and plants at the time of calving between cows on calving grounds and bulls still south of calving grounds. The bulls were feeding in more nutritious plant communities than the cows (Appendix I:Table 1). If the calving grounds were really unique in the quality of forage then the bulls should have been with the cows. If the cows were primarily "interested" in the quality of their forage, they should have stayed back with the bulls. The fact that cows commonly calve on Eriophorum tussock associations may be due to the particular microtopography of these habitats which results in little accumulation of snow and early snow melt (Benson 1969). That is not to say that caribou do not optimally forage within the constraints of selecting the best overall habitat to avoid predators. However, over all, the diet of the cows in late May and early June is not highly nutritious (Appendix I:Table 1) and this has resulted because of their own migratory behaviour.

The location of the calving grounds varies between years because of annual variations in snow cover. The caribou arrived on the calving

grounds of the Porcupine Herd on 5 May 1974 and 12 May 1975 when snow cover was light; they arrived 20 May 1976 and 24 May 1973 with medium snow cover and even later on 26 May and 30 May when winter snows had been heavy (Curatolo and Roseneau 1977). The calving ground of the Porcupine Herd is on the areas of reduced snow cover generally sandwiched between the foothills and the slightly colder coastal strip (Fig. 2). In an early spring, as in 1974, the animals will be farther west and north than in late years such as 1972 and 1973. In an early year, more caribou will calve in the 1002 area than in a late year. In 1982, the season was so retarded that the herd calved in the Yukon (ANWR Progress Rept FY 83-6). We can think of the annual variations as caused by snow induced limitations to the basic spacing antipredator tactic. But within this tactic, to maximize the distance from tree line, the animals also need to find brown substrates so that calves can be cryptic, especially to avoid predation from golden eagles (Aquila chrysaetos). Thus snow cover affects the distribution within the coastal plain but not the overall regional distribution.

We know less about the extrinsic and socialization factors in the massing of caribou in late June and July than we know about calving. In some years, such as 1976 and 1981, no large aggregations formed. But in all years, the animals concentrate on the 1002 lands. This occurred even in 1982 when the herd calved in the Yukon (ANWR Progress Rept. FY 83-6). We also know that the Porcupine Herd is unique that in some years the entire herd comes together for a few days in July. This represents the most spectacular aggregation of ungulates in North America and compares favorably with the aggregating of the wildebeeste (Connochaetes taurinus)



P-10

Figure 2. The snow profile of northeastern Alaska in late May 1978 (from Lent 1980).

on the Serengeti.

Initially, after calving, cows with their calves group together in the vicinity of where the calves were born (Lent 1966, Bergerud 1974b). This aggregating represents another antipredator tactic. A caribou calf will benefit if there is another animal between itself and a predator (the selfish herd concept) (Appendix II). Later, with the onset of the mosquitoes, the caribou in the Porcupine Herd move to the coast where cooler temperatures and fog provide some relief. The animals are usually concentrated in July south of Barter Island in the 1002 lands.

Why is this particular strip of coast selected? The animals may select the coast adjacent to Barter Island simply because the core calving area is near the Jago River, hence a direct route to the coast leads to Barter Island. In support of this view, in 1974, when the concentrated calving was along the Katakturuk River, the post calving grouping was at nearby Camden Bay. But to the contrary of this sequence, when the animals calved near Herschel Island in 1982, they still travelled up the coast after calving to the area adjacent to Barter Island (ANWR Progress Rept. FY 83-6). This fidelity to the coast opposite Barter Island could be due primarily to (1) tradition and socialization, or it might result because (2) the animals may, between the end of calving and the emergence of insects, follow the green phenology west, or, (3) the concentration at Barter Island may relate to some additional relief factor from mosquitoes. For example, a small herd of 2000 animals on the Hudson Bay Coast in Ontario aggregates in July on the tidal benches where there are large mud flats. In the absence of vegetation to hold insects, these caribou probably gain added relief from mosquitoes. This same situation

may hold for the tidal flats near Barter Island. Thus we don't know if the uniqueness of the gathering near Barter Island is because of its juxtaposition to calving locations or if the area, per se, has its own special attraction.

Critique of the Arctic National Wildlife Refuge-Alaska Coastal Plain Resource Assessment

My comments are limited here to the full leasing option and are restricted to caribou. This is the worst case scenario and many of my comments will reflect my view that caribou can adapt to full leasing and developing if the proper mitigating actions are taken. I will only discuss my major criticisms, which does not mean that I necessarily agree with sections not discussed.

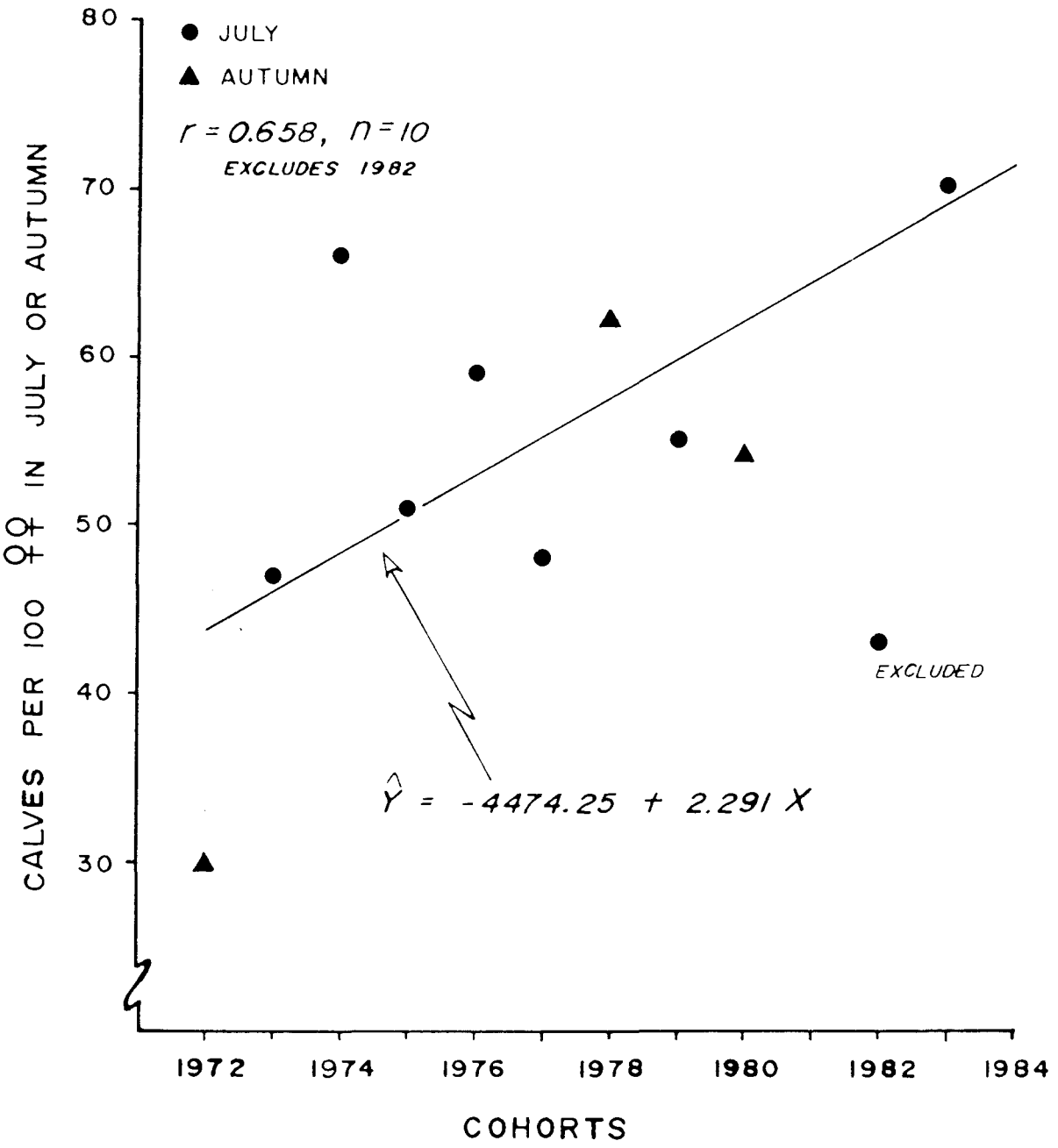
P-11

2 mile limit: On several pages it is suggested that maternal cows will avoid a strip 2-miles out from major roads and development. This implies a 4-mile displacement when both sides of the road are considered. The reference for this avoidance strip is Dau and Cameron (1986). Based on this 2-mile rule, the report calculates the acreage lost to caribou from development. Firstly, the concern should not be the lost acreage as it relates to carrying capacity. The cows have not selected the coastal plain for it forage resources but to avoid predators. If wolves travel the haul road, as they did the TAPS highway (Roby 1978) it will be advantageous for caribou to avoid the habitat adjacent to the road. Secondly, Dau and Cameron (1986) did not show caribou avoidance of a 2-mile strip on both sides of travel routes. Dau and Cameron documented

a 50% avoidance of adjacent habitats at 2 kilometers from the road and no avoidance at 3 kilometers (p. 100:Fig. 4). Thus there should be 50% avoidance at 1.2 miles and no avoidance at 1.9 miles. Actually, Murphy and Curatolo (in press) show that caribou, including cows and calves, resume normal foraging and daily activities when 600 meters from active roads in the Prudhoe oil field. Therefore, a maximum statement is that maternal cows avoid about a 1½ mile strip on each side of the road; thus the displacement statements in the report should be reduced substantially.

If development proceeds in area 3 as shown on page 7 of the assessment statement, there would be 47 miles of road in the core calving area. We could expect maternal cows to be displaced from an area of 141 mi^2 or about 90,000 acres. However, the area between the two parallel roads in the hypothetical development would also probably be lost. Parallel roads to reach different objectives should be avoided. However, parallel roads to reach the same objective might be a way to re-direct traffic to minimize disturbance, depending upon which route has the most caribou nearby.

P. 28, Para. 1. "The lower levels of earlier estimates may reflect a truly smaller population, less accurate or less complete survey techniques,...". Because the Porcupine herd gathers in one or a few major aggregations, the census results of the herd by aerial photography is highly accurate. The herd has definitely been increasing. This increase has resulted from greater calf survival (Fig. 3). The increased calf survival occurred because wolves were reduced by rabies in the late 1970's and early 1980's. Jakimchuk and associates saw considerably more wolves in 1971 and 1972 than have been seen in recent years.



P-12

Figure 3. The regression of calf survival (calves/100 ♀♀) on year.

P. 29, Para. 4. "Access to insect-relief habitat and forage resources during this period may be critical to herd productivity." No one has documented that fecundity or calf survival have been affected by failure to reach mosquito relief habitat. There are no other large herds in North America that have access to a foggy coastal strip. Even if the animals could not use the coastal strip this would only put them on par with other herds. Note that there were an excellent 59 calves/100 cows in July 1976; in that year the animals did not mass on the shores of the coast. However, if caribou did seek the foothills for insect relief, reduced calf survival would be expected because of increased predation.

In this paragraph and throughout the report, the word "productivity" is used as a synonym for "recruitment". This is an unfortunate usage. To many ecologists, productivity brings to mind "to produce", the elements of reproduction, and for others it implies biomass as in the terms primary and secondary productivity. The use of the word "productivity" comes with the philosophy of a food carrying capacity. For many ungulates in the lower 48 states (where there are no wolves) the number of young born per 100 adult females does vary with nutritional conditions. In these southern ungulates, the final recruitment may indeed reflect the initial variations in pregnancy percentages. For caribou, we should use the terms "fecundity", "parous percentage", or "pregnancy rate" to describe the initial number of calves/100 cows at birth, prior to mortality. The emphasis thereafter should be on documenting the survival or mortality statistics; the final yearlings/100 females parameter at 12 months should be called "recruitment". "Productivity" is a catch-all and reveals a basic indoctrination that the resources of the land result

in cows being productive or not productive. Since fecundity is fixed in mature caribou the emphasis should always be on survival after the calves are born.

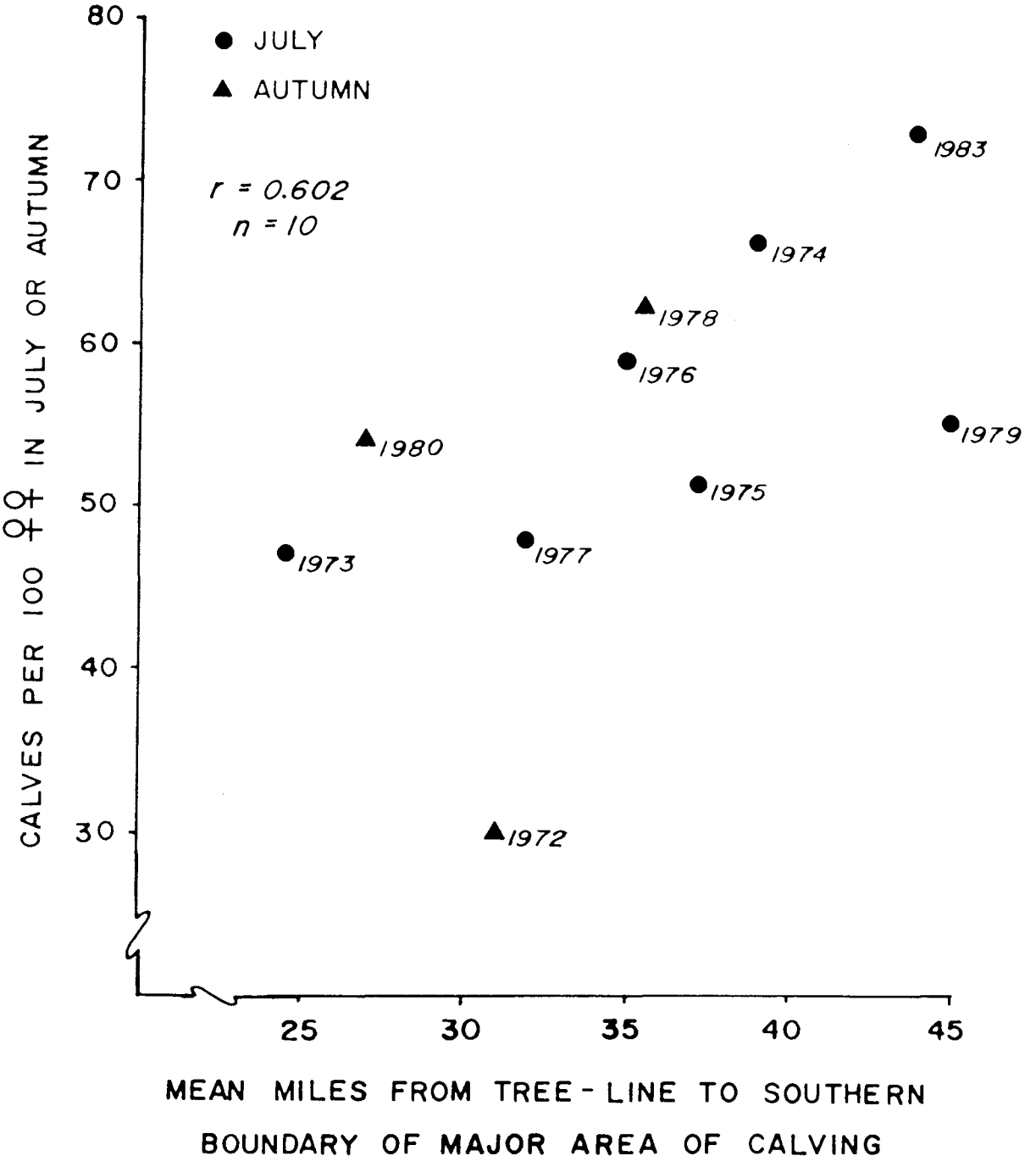
P. 29, Para. 10. "Riparian areas are used for travel corridors...". This does not sound feasible since wolves also use riparian areas for travel. Caribou in Spatsizi, B.C. avoid ambush cover in tall willows (Bergerud, Butler and Miller 1984). Also the streams are in flood in late May and early June and are not suitable for small calves. In Svalbard, T. Skogland (pers. comm.) indicated that bull caribou use the riparian communities and flood plains but cows avoid these dangerous areas. Curatolo (1985) also indicated that bulls used the riparian community but cows generally avoid them (see also Roby 1978).

P-13

P. 108, Para. 1. "Caribou select calving areas because of favorable... advanced new vegetation...proximity to insect relief habitat...". Caribou only select calving grounds to avoid predators (Appendix I,II). The report is too general in using the word "insect-relief". Generally, insect relief is meant to include both mosquitoes and oestrid flies, whereas the coastal habitats that the caribou seek are to escape only mosquitoes. Oestrids do not emerge until late in July, when the animals have left the 1002 lands.

P. 108, Para. 2. "Displacement of the PCH from a core calving area to a less desirable area would be expected to reduce productivity". Again, the word should not be productivity. If the development results in a

displacement of caribou farther south towards tree line it will result in increased predation (Fig. 4) and reduced survival. "Loss of important habitat has been shown to directly impact ungulate populations (Wolfe, 1978; Skovlin, 1982)". This is a general motherhood statement and these references are for ungulates living without wolves and are not appropriate for the Porcupine Herd. When caribou herds increase they expand their range and when they decline the range shrinks (Bergerud 1980). Calf survival drives numbers and hence range occupancy. "...Whitten and Cameron (1985) contend that the CAH has not experienced a reduction in productivity ... because (1) the CAH has been displaced from only a part of its calving grounds;...". The herd could be displaced from all of its calving area and still not decline if predator numbers were managed. The CAH herd increased 1972 to 1985 because of high calf survival since wolf numbers had declined with development. As their second point, Whitten and Cameron argued that the CAH did not decline with development because "...(2) suitable alternative high-quality habitat appears available...". The habitat at Prudhoe Bay is so poor that White et al. (1975) calculated some negative energy budgets and thought that the herd was energy-limited when it numbered a few thousand animals in the early 1970's. Again, the habitat was thought to be so poor from a forage standpoint that Skogland (1980) listed it as the area with the least plant biomass of 6 herds in the Holarctic. Yet today the CAH has grown to >15,000 animals. Point 2 of Whitten and Cameron (1985), referenced in the assessment statement, is an ad hoc hypothesis to explain away the herd's prosperity in the face of development. As their last point, Whitten and Cameron felt that the CAH



P-14

Figure 4. The regression of calf survival (calves/100 ♀♀) on distance of calving ground from tree line.

has not declined with development because the "...(3) overall density of CAH caribou on their calving grounds is much lower than that of arctic herds in Alaska". Again, this reflects Whitten and Cmeron's dogmatic opinion that forage determines numbers. The CAH calving ground is about 125 miles from tree line and the PCH, only 30-40 miles. Given the much larger "safe" space, the cows in the CAH are also able to disperse which is another antipredator tactic (Appendix II). The animals in the PCH herd, faced with less space, are more aggregated. Again this is expected, if the animals were dispersed, many would be nearer tree line and at greater predation risk. Since food supplies are not limiting for either herd, the greater densities for the PCH are not a problem. In fact the aggregating is a tactic to avoid predators; when animals face food problems such as in the high arctic or on Svalbard, the groups disperse and densities are low (T. Skogland and F. Miller, pers. comm.).

P. 108, Para. 3. "Both absolute..." This paragraph is irrelevant. One cannot use density figures (see above) to argue that the PCH will face greater consequences than the CAH from development. The CAH lives year round with development and has prospered; the PCH will only be near the development for 2-3 months. Densities are functions of aggregating behaviour and the lower densities for the CAH than the PCH mean greater forage as well as less space for the PCH, and in no way signify the density-dependent problems that Whitten and Cameron imply.

P. 108, Para. 4. "With the CAH calving density remaining low compared to other herds,... overcrowding and consequent habitat stress that might

result in reduced productivity have not yet occurred, ..." This statement is not correct; there is no habitat stress. The CAH cows have selected their calving range, with its low plant biomass, to avoid predators. Cows in other herds in North America are also prepared to sacrifice optimal foraging to avoid predators (Ferguson 1982, Bergerud et al. 1984).

P. 108, Para. 5. "The PCH is much more crowded..." They are not crowded - they aggregate to maintain maximum distance from tree line.

P. 109, Para. 2. This paragraph continues to discuss insect disturbance. But what is involved is primarily mosquitoes. Oestrid flies are not on the wing until the animals leave the 1002 lands. Helle in his publications was primarily concerned with oestrids and other flies and not mosquitoes. To quote their work in this context of causing mortality is stretching the argument.

P-15

P. 109, Para. 6. "Failure to obtain relief from insect harassment from either factor (barrier or displacement) could shorten foraging time, leading to poorer physical condition and subsequently to increased susceptibility to predation and reduced overwinter survival."
The 1976 and 1981 cohorts did not apparently use the coast line for insect relief and these cohorts did quite well. These animals are not on a fine edge in physical condition. No one has documented winter starvation in North America as a result of high insect years. When the insects abate in late August and September, the animals are able to recoop their losses

and fatten for winter. Remember that the Porcupine herd has a unique fog belt for insect relief that other herds do not have and even they (PCH) desert the mosquito relief habitat by mid-July. Murphy and Curatolo (in press) showed that caribou at Prudhoe Bay, away from the road, feed 53% of the day prior to mosquito emergence, 41% with mosquito harassment and 29% with oestrids on the wing. Oestrid flies harass caribou more than do mosquitoes and yet PCH animals contend with oestrid flies well inland in August.

P. 112, Para. 4. (and p. 132 as well) "These changes ... could result in a major population decline and change in distribution of 20-40 percent..." They have provided no data to show a 20-40% population decline. Neither was a concensus reached on the magnitude of any negative effects on the PCH population size or distribution by the 14 specialists at the Caribou Impact Analysis Workshop (ANWR) in November, 1985. I believe that the caribou will continue to use the 1002 lands with development, except near active roads. Even if there was some displacement, there is no need for the herd to decline if wolf populations are managed to provide positive recruitment or calf survival sufficient to balance natural and hunting mortality.

P. 112, Para. 5. "The population decline or distribution change would be 5 - 10 percent for the CAH throughout its range." There is no evidence to support such a decline. A change in distribution cannot cause a decline unless it changes the reproductive or mortality rates. Caribou, even in undisturbed populations, frequently exhibit range shifts,

including areas used for calving. Why can't the authors be objective? The empirical evidence is there for all to see; the CAH increased coincident with development because predator numbers were reduced. How can the field findings be twisted to fit preconceived ideas?

Impacts and Mitigation

The one guarenteed impact of the development of the 1002 lands will be that cows with young calves will avoid active roads for a distance of >1.2 miles. This is based both on theoretical considerations (Bergerud et al. 1984) and empirical observations (Dau and Cameron 1986). The loss of this habitat will not cause additional stress on the animals since they are not nutritionally limited. Nor will activity budgets be seriously altered by development activities (Murphy and Curatolo in press). It might be more serious if the animals remained near the road where predators may travel. We do not want these cows to habituate to traffic because this would suggest that they might become less wary to their natural predators.

P-16

An impact that might affect calf survival would be if the females in May failed to cross the east-west haul road because of the traffic and shifted their calving distribution closer to the foothills where there are greater numbers of wolves and bears. Such a barrier affect has not resulted from the TAPS corridor and haul road. The CAH animals have crossed the road and shifted their distributions between years, making use of habitats both east and west of the corridor. Presumably, these shifts relate to snow cover (Jakimchuk pers. comm.). The PCH herd, since it is both more migratory and larger than the CAH, should

cross a pipeline-road corridor more readily than the CAH. Also, the PCH caribou should cross rather than be funneled by the corridor because caribou should not be easily deflected when undertaking directional shifts to antipredator and mosquito-relief habitat.

Certainly, every effort must be made to allow the animals to continue to use all their potential space to avoid predators. Initially, until the impact of the corridor is understood, traffic will have to be prohibited in the period May 15-June 10 within several miles of cows moving west or north towards the road. Another effort to mitigate the effect of the corridor should be to reduce its visual impact as seen by animals entering the area (moving north and west). Once in the area, the animals will find their way out. If ramps are built they are more important on the south side of the road than on the north side. Murphy and Curatolo (in press) have shown that disturbance is greater when there is an active road combined with a pipeline. Theoretically, the vehicle appears as a predator - and the pipeline as the ambush cover. The pipeline and haul road should be separated by at least 1 km with the pipeline north of the road. Pipelines should be cryptic (painted green and brown), be motionless and scentless.

Another potential impact is that the road facilities will increase predator access to the herd. Wolves can be expected to move north down river valleys and then move laterally, using the road to cross rivers east and west. The cows, by calving between north-south river valleys, have in the past taken advantage of the rivers as potential barriers to east-west movements of predators, especially since the rivers are in flood in late May and early June. We do not want to increase the ease of

access to calving areas for predators by development (Bergerud 1985).

Even if the calving animals are displaced southwards by the corridor, the PCH can remain a viable herd if predator populations are managed. It is an incredible omission in this impact statement that predator management was not mentioned. The reduction of wolves is our major tool to improve calf survival. Wolves would not necessarily have to be reduced on the Coastal Plain. Control operations could take place on the winter range. The goal would be to have recruitment equal natural mortality + hunting mortality, which means, for the Porcupine herd, that about 12% of the herd should be yearlings in April-May (Bergerud and Elliot 1986). This oil development may provide advantages for predators. Once we disturb the status-quo, we must be prepared to manage the predators. This management is the fail-safe position.

P-17

I believe that the PCH will cross the haul road in seeking mosquito relief along the coast. The cow and calf that Curatolo (1986) radio-tracked in the CAH herd crossed the road 8 times in one mosquito season. Once a large herd starts across it will continue even if a vehicle approaches. Certainly large herds moving west and north will have to be monitored hourly as they approach the corridor and all traffic halted or rerouted. However, even if the animals did not cross and gain the coastal strip, I believe that the herd wuould be little affected in its vitality.

The one fact that we cannot escape is that the wilderness character of the coastal plain will be lost for decades. The post calving aggregation of the Porcupine Herd is the most spectacular large mammal display on the North American continent. We must do all that we can to

see that this massing does not become a memory as did the thundering buffalo herds of the plains. The animals should continue to mass in the undisturbed KIC lands, adjacent to the coast, in a wilderness setting.

Because I believe caribou can coexist in close proximity to an ethical man, I look forward to the day when I can go on a guided tour down the Haul road and view this massing of the mighty legions in July. The day will surely come when the old rigs will have been dismantled, the pipes disassembled, the scars left to heel, and the wind again sweeps unrestricted across the cotton grass plains. The caribou will still be there in uncounted numbers, coming as always down their ancestral tracks, and, we too will be there to see and marvel at the majestics of our fellow species.

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U.S. Fish and Wildlife Service
[illegible] Division of Refuge Management

Please accept the following comments on the proposed leasing of the Arctic National Wildlife Refuge 1002 area.

First, the enabling legislation which set aside the Arctic NWR stated four general goals for management (ANILCA PL96487, sec. 303 (2)(B)(i-iv)), all of which would be negated if leasing is allowed. To destroy the reasons the refuge was set aside, for the sake of oil leasing would not be in the national interest. Amazingly Secretary Horn has recommended leasing of the NWR, even though his own Coastal Plain Resource Assessmnet admits that Major environmental damage will occur the Porcupine caribou herd, major damage to the muskoxen, moderate (questionable, probably catastrophic) effects on polar and grizzly bears, possible elimination of the wolverine. When the draft says that wildlife will be displaced, they fail to mention where the wildlife will be displaced to. The Coastal Plain 1002 area is the last hope for wildlife. The entire National Petroleum Reserve is open to leasing.

The report states there is only a 20% chance of finding oil, and to be economical to produce, oil must be several times higher than it is at present. Here in Texas, most people in the oil industry are laid off, indefinetly. Should we destroy the best habitat for caribou in the world, on the hope of finding oil, that at present cannot even be used?

P-20

Mitigation is a joke, especially in the Arctic environment. Stipulations requiring prohibiting disturbance, implementing time and area closures, and on site monitoring wont help a bit if the species is provoked, such as the muskoxen, into leaving an area where it was disturbed. I have worked in Arctic Alaska, and have observed muskox one day, went back the next day in a helicopter, only to find the herd several miles away. What will happen when hundreds of flights occur? The muskox will leave, if the roustabouts don't shoot them first.

How can you mitigate an oil spill? Since 1972, there have been 23,000 reported oil spills. I cannot understand anyone wanting

to destroy the finest piece of real estate in North America. We cannot treat the coastal plain as a seperate entity. The integrity of the entire refuge will forever be destroyed if oil leasing is allowed.

One thing that the study does not cover in enough detail, in my opinion, is how to prevent a boom/bust cycle from occuring among the North Slope communities such as Kaktovik. Most employees will be out-of-state, but local communities will still be economically enhanced. But after the oil is gone, what then? A subsistence type of lifestyle will be lost forever. A few oil companies will profit, the State of Alaska will reap some taxes, but the natives will lose their way of life.

It is the contention of several groups, including myself, that the managing agency is biased towards development. Throughout the decision making process, Department of Interior and USFWS have done everything possible to minimize public involvement. USFWS has spent 300,000 dollars appraising land values in order to develop exchange agreements, which would remove subsurface mineral rights from federal ownership. If it weren't for Trustees of Alaska, no public review period would exist at all.

I am disturbed by one thing that I could not find mention of anywhere in the Coastal Plain Resource Assessment. During 1985, the leasing program for the NPRA was cancelled for lack of industry interest. I don't have information on 1986 NPRA leasing programs. I think this information should be included in the record--should we open up the last coastal area, when the developed fields don't draw any interest? Definetely not.

I wish to go on record as supporting Alternative E. Designating sec. 1002 of the Arctic NWR is the only alternative which adequately protects and enhances the four basic principles for which the refuge was created. Under federal wilderness protection, the coastal plain would protect the resources for all, not a few. And if in the future the oil resources are needed, they will still be there. But if we develop these resources now, every other value, such as wildlife, wilderness, recreation, and subsistence resources will be irretrievably lost.

Thank you,

Phillip H. Briggs
Rt. 2, Box 198
Beckville, TX 75631

PH.#214-678-3673

cc. Senator J. Bennet Johnson Chairman, Senate Energy and Natural
Honorable Steve Cowper, Governor State of Alaska
Senator Phil Gramm, TX
Senator Lloyd Bentsen, TX
Representative Jim Chapman, TX
Representative Morris Udall

DO YOU WANT TO MAKE PUBLIC COMMENTS?

If you would like to speak at the hearing today, please fill in the blanks below and turn it in to one of the Fish and Wildlife Staff members present. You need not complete this sheet to submit written comments. Thank you.

Please print

Name Anne Brown

Mailing Address 8731 Sultana Drive

Anchorage AK 99516

Check appropriate box below:

☒ I am here to offer my own views.

--or--

☐ I am speaking for _____

(please enter name of organization you represent)

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DRAFT LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT

ARCTIC NATIONAL WILDLIFE REFUGE, ALASKA

COASTAL PLAIN RESOURCE ASSESSMENT

TESTIMONY OF ANNE L. BROWN

8731 SULTANA DRIVE, ANCHORAGE ALASKA 99516

JANUARY 5, 1987

Mr. Chairman:

My name is Anne Brown. I am a fourteen year Alaskan resident and am representing myself at today's hearing.

It was a great surprise to receive the 1002(h) report and find it was a single volume, concise and well organized. I appreciate the careful, and judicious effort that obviously went into presenting and assessing more than six years of work done in the 1002 area. As a result, I have been able to read the report in its entirety.

The need for future domestic energy reserves and the economic benefits for all Alaskans and most U.S. citizens are the most compelling arguments in support of oil and gas leasing in the 1002 area. ~~However,~~ I could not support leasing if I were not confident, given the information in this document, and knowledge of the Prudhoe Bay experience, that industry can explore for and produce oil and gas with minimal changes to the environment that have not, and will not, affect the integrity of wildlife populations. I strongly support ~~DOI~~'s proposal to congress for full leasing of the Coastal Plain.

As a professional biologist, I read with particular interest the section on environmental consequences. The backbone of this section is the application of the habitat based impact assessment technique derived from the USFWS Mitigation Policy. This is not surprising since FWS has pushed for years to apply their national policy to Alaska. While it may be logical to apply the FWS Mitigation Policy to many regions in the lower forty-eight, there currently is no evidence which even suggests that habitat is a population limiting factor in the arctic. In fact, evidence shows that wildlife populations in the arctic are regulated primarily by non-human and human predation, weather, disease, parasites, and emigration. Although a habitat based system lends itself readily to precise quantitative analyses, and facilitates the bookkeeping of mitigative and compensatory requirements, it is meaningless from a biologic perspective in the arctic. At most, it satisfies political pressures.

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I support the FWS mitigation concepts of avoiding impacts where possible, minimizing impacts through project design when they cannot be avoided, and rehabilitating disturbed areas where surface impacts are extensive or have a significant adverse effect on wildlife populations. These principles, however, can be applied much more effectively outside the bounds of the FWS Mitigation Policy when population and mechanisms whereby development activities might limit populations are the basis for mitigation recommendations.

It is interesting to note that FWS sponsored a research project published in 1982 titled "An Assessment of a Wildlife Habitat Evaluation Methodology for Alaska". The study was based on the assumption that to mitigate effectively

the impacts from large scale natural resource development projects you have to mitigate the habitat losses accruing from such projects. It set out to examine experimentally habitat evaluation procedures for several species including caribou. With the exception of a few species, like beaver, that are habitat specialists and have very small home ranges, the conclusion was that the USFWS habitat evaluation type approach was simply not workable, especially for large herbivorous animals that are wide-ranging, or for any predatory species.

In spite of the inappropriate application of the FWS Habitat Evaluation Procedures, the authors of this report to congress are to be credited with presenting a tremendous amount of environmental material in a systematic manner. Biologic information, for the most part, was evaluated objectively. The only notable exception is the information on caribou.

The biases inherent in the caribou sections stem from the obvious disregard for much of the published work on caribou in the arctic, and from the less than scientific techniques developed to support the controversial notion of a caribou core calving area. Added to this, is the misuse of habitat evaluation procedures, whereby the authors assume complete displacement from any habitat with reduced value due to either direct or indirect affects of oil and gas operations. This has lead to the irresponsible and unreasonable prediction of major population declines in both the Porcupine and Central Arctic caribou herds if the entire 1002 area is leased for oil and gas development.

Species-by-species discussions in the draft report indicate that displacement or blockage is the primary mechanism by which wildlife populations could be adversely affected. The technology exists to design an oilfield that assures free passage of migratory birds and animals. We have the laws, and the commitment on the part of government and industry to insure the integrity of the arctic environment and wildlife populations. I am convinced that the caribou and other biological issues raised by opponents to full leasing of the Coastal Plain are red herrings. What conflicting views really boil down to are disagreements regarding aesthetics.

~~And~~, It's important to separate aesthetic feelings from biological issues and conclusions. Aesthetic arguments are frustrating because, by definition, they are based on very personal feelings. So many people involved in the discussion of the aesthetics of the 1002 area have never been to the North Slope or to Prudhoe Bay or ANWR in particular. They speak from a mental image that probably does the beauty and uniqueness of the region justice, but cannot possibly comprehend its vastness, its resilience and the insignificance of the presence of the largest oilfield in North American on the surface of the arctic. For most of those people who speak from experience, that experience was possible and memorable because of Prudhoe Bay, not diminished because of Prudhoe Bay.

P-23

I will never forget the first time I flew into Prudhoe Bay in 1978. The excitement of its remoteness and the awesome expanse of ~~both~~ the coastal plain spotted by polygonal lakes and the ice pack extending beyond the horizon are unforgettable. Most striking however was how small the industry facilities seemed amidst the expanse of the wilderness. Here was Alaska's economic life's blood and 20% of the nation's energy production and yet what

stood out was the environment, the incredibly beautiful surroundings, the wildflowers, the caribou and the waterbirds. I have spent a lot of time on the North Slope since then and feel lucky for every opportunity personally and professionally. Prudhoe Bay has provided a tremendous amount of opportunity and funding for biological research that otherwise would never have occurred. The leasing of the 1002 area will bring similar opportunities for individuals in my profession as well as engineers, drillers, accountants, lawyers, regulators, bankers and the general public; and it is necessary to meet the economic needs of this State and the energy needs of our nation.

Thank you.

DO YOU WANT TO MAKE PUBLIC COMMENTS?

If you would like to speak at the hearing today, please fill in the blanks below and turn it in to one of the Fish and Wildlife Staff members present. You need not complete this sheet to submit written comments. Thank you.

Please print

Name Peter D. Brown

Mailing Address 4731 Sultana Dr.
Anchorage, Ak. 99516

Check appropriate box below:

☒ I am here to offer my own views.

—or—

☐ I am speaking for _____
(please enter name of organization you represent)

P-24

My name is Peter Brown and I am speaking as a private citizen.

I support Interior's ~~recommendation~~ recommendation to fully explore and lease ANWAR. Direct experience in the Arctic has repeatedly shown that oil development can occur without ~~major~~ damage to the environment while providing major benefits to the United States and the State of Alaska.

I do feel that the 1002 report grossly ~~misrepresents~~ exaggerates the extent of environmental costs and that the public has been very ill-served by the Fish and Wildlife authors' ~~misinterpretation~~ of existing data with respect to caribou impact.

Implicit in their assessment but never openly stated are a number of subtle but critical assumptions which need to be explicitly stated and scrutinized. Examination of these unstated assumptions will reveal them to be ~~thoroughly~~ seriously flawed. Furthermore, these assumptions are not supported by the very data F & W uses, namely the Alaska Fish and Game study of Caribou in the Milne point area.

Specifically, the critically flawed assumptions are:

1 the repeated misapplication of the "Sphere of Influence" concept ~~and~~

2. the idea that significant habitat area will be lost ~~and~~

3. that availible habitat is the major limiting factor in arctic wildlife populations.

1st of all
The F&G study does show that caribou avoid calving within ~~by~~ 2 miles of an active roadway ~~and~~ but that the effect on non calving activity is minimal. From that F&W erroneously infers that all habitat within that "sphere of influence" is lost and that this loss of habitat will result in a loss of population. This is bad science at its worst and reduces wildlife study to the intellectual level of phrenology.

~~First of all,~~ The preponderance of evidence suggests that calving activity will simply be displaced beyond the 2 mile range, relocated but not disrupted entirely. Furthermore, the disruption which does result from road traffic ~~would~~ can be limited by industry at the critical times to further reduce the effect to levels that may be insignificant even within the 2 mile range.

Secondly, the Sphere of influence concept as applied by F&W automatically assumes that all habitat value within the zone is eliminated when in fact the effect on non calving activity has been shown to be minimal.

Finally, a principal theme in F&W remarks and policy is that habitat loss is a predominant factor in arctic wildlife population change. Although biologically unsound, this emphasis on habitat does allow F&W to avoid a politically sensitive but biologically significant

issue, predation, especially controllable human predation by subsistance and sport hunters.

I am appalled by the quality of thought in F&W's method and conclusions. F&W should focus on the real issue, game populations, rather than the red herring of habitat loss and the misapplication of the sphere of influence concept. This seriously erodes the scientific integrity of public discussion of a complex and emotionally significant issue. This is particularly unfortunate when Fish and Wildlife's conclusions are not supported by data and create the appearance of a conflict between wildlife and development where none in fact exists.

Peter D. Brown
1/5/87

United States Fish and Wildlife Service 1/25/87
Attn: Division of Refuge Management Resources
2343 Main Interior Building
18th and C Streets, N.W.
Washington, D.C. 20240

To Whom It May Concern,

I am writing concerning the oil exploration and leasing proposed on the Arctic National Wildlife Refuge. I would like my opinion to go on record as opposing opening up this area for oil exploration and leasing.

As an Alaskan and a United States citizen, I realize there are some benefits of oil development in this area but I have come to the conclusion that the costs, in terms of the ecology, wildlife, wilderness and future subsistence values, are far too high for the oil potential present.

Impacts on the ANWR have been underestimated by the draft 1002 report. If Prudhoe Bay type facilities are required to explore and develop the oil resources, the web of pads, roads and pipelines would significantly alter the area. Table V-1 does not include major types of facilities that would be required such as exploratory pads, secondary roads, pipeline construction roads, base camps, construction camps, support facilities, minor stream crossings, reserve pits, pipeline maintenance centers, pump stations, airstrips, etc. Also, the impact of roads between Prudhoe Bay and ANWR are not discussed in the report. These roads and pipeline extensions will have impacts both on and off the refuge.

Since there were few baseline studies done before Prudhoe Bay was developed the idea that the oil companies have developed the area without impacts cannot be substantiated. Serious impacts that have occured at Prudhoe Bay are not addressed in the report, including water quality impacts described by Zemansky (1983).

The draft 1002 report should have been written on the higher reserve potential and not the mean since it is the higher potential that is being used to justify compromising the ecosystem this refuge was intended to protect. In any case, the reserve potential is not high enough to merit destroying this essential habitat for the caribou herd.

As managers of the United States fish and wildlife resources I urge you to support Alternative E in the draft 1002 report, which recommends wilderness designation for the entire Arctic Refuge coastal plain.

Thank you for your consideration,

Susanne Carter-Badilla

Susanne Carter-Badilla
Box 182
Douglas, Alaska 99824

Zemansky, G.M. 1983. Water Quality Regulation during Construction of Trans-Alaska Oil Pipeline System. PhD dissertation. University of Washington. 957 pp.

P-26

13 Grafton Street
on Gallows Hill
Salem, Massachusetts 01970
19 January 1987

U.S. Fish and Wildlife Service
Division of Refuge Management
2343 Main Interior Building
18th and C Streets NW
Washington, D.C. 20240

re: leasing of the Alaskan 1002 area

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To Whom It May Concern:

I have just finished reading the executive summary of the draft Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment, and the accompanying press release; and I must say I am APPALLED.

Appalled for several reasons, not the least of which is the blatant political and rhetorical manipulation exhibited in this project. Though I know there is no reason why I should be among the first to read this report, it is unconscionable for you to be sending it out so that I receive it on the 17th when written comment must be made by the 23rd. You are managing the debate in a shamelessly underhanded fashion to get what you want. Other examples of this are quoting a $33 and $40 price for oil, when the current price is less that $20 — a price quote that is, forward or back, out of date. Then you turn around and use current drilling rates. This is called lying with statistics. Is this what we should expect? Perhaps you should ask to have your Services renamed in accordance with what they actually do: The Fish and Wildlife Habitat Destruction Service, partnered with the Bureau of Land Exploitation.

Shameful as this is, it is not the substantive issue that needs to be discussed. What we are looking at is a vital (in every sense of the word) habitat that the administration, in its arrogance and greed, wishes to turn into part of the oil patch. You, yourselves, admit that there is no way to avoid adverse effects on this part of the environment — it may only be possible to mitigate these effects. In fact, if development were to occur, not only would there be immediate adverse effects on the caribou and other species that use this area, but eventually the entire area will become industrialized, to the permanent loss of this wilderness. Further, a statistically probable accident prior to full industrialization would also render portions of the 1002 area uninhabitable. Your solution to such damage appears to be that the offending party should pay a fine. Looked at another way, while the wilderness dies, little green pieces of paper move from one pocket to another. This is not a solution, but only the way men in cities, who see everything as coming down to money, think the situation would be alleviated. The wilderness would still be just as damaged, for we are not Godlike in our power to revivify what we destroy. On another, but related tack, you may look upon the changes in the lives of the indigenous people as positive. Objectively speaking, this is debatable. Lastly, you reccommend giving yourselves full oversight management. This strikes me as letting the fox guard the henhouse.

On the economic front, it seems ludicrous to be sinking new wells in unspoiled and neccessary (at least to the animal inhabitants) wilderness, when existing wells are lying dormant from the oil glut. Let us use what we have. The situation must, in my book, reach crisis proportions before we start to destroy our nation's heritage to salve it. And I'm talking about real crisis — not like those trumped to influence the uninformed with needless fright. Careful, minimal exploration might be in order to prepare for this.

Finally, let not the arrogance of Mankind -- and the heightened form found in government officialdom -- lead us to think that our short term needs are the most important thing there is. That kind of logic is worthy only of a child. Be wise, statesmanlike, forbearing and truly conservative -- conserve what cannot be be replaced, lest our children suffer without.

Thanks for your time and attention, but thank you the more for taking this to heart.

Sincerely,

C. Alexander Cohen

C. Alexander Cohen

cc: members of the House and Senate

Jan 22, 1987

U.S. Fish & Wildlife Service
ATTN: Div. of Refuge Mgmt.
2343 Main Interior Bldg
18th C Sts. N.W.
Washington, D.C. 20240

Dear Refuge Mgmt. Staff;

The management designation of 1002 Study lands in the Arctic National Wildlife Refuge is about to be decided by this office. Regardless of the feelings of the present administration and Secretary (& asst. Secy) of Interior, the expertise of your field staff in Fairbanks should be followed as to their management preference for this fragile arctic environment. I strongly support the selection of alternative E instead of alternative A, being the nomination to wilderness.

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My reasons are:

(1) Prices quoted in the plan for crude oil are nearly twice the current world market price. ($18.22/bl as of Jan 22, 87 instead of $33.22/bl). This overestimate of barrel prices presents an unrealistic economic scenario in this decision-making process.

(2) The production values in the yr 2000 are not reflective of the reference sources quoted in the written statements. (8600 thds of bl/d as compared to DOE (6.53 MBO/d) values for 1995 and Chevron (6.2 MBO/d revised for 2000.) Again this error is only typical of false information that attempts to support a questionable use of public lands/resources

(3) Present investigation data suggests only a 20% of finding a significant oil producing field. Such low odds are not practical in the comparison of destroyed, damaged, or disturbed environments in this fragile system.

cont.

(4) The present knowledge as gained from oil & gas exploration, drilling & production as well as the construction of the pipeline (TAPS) is not conducive in it's estimation of damage and destruction of fragile arctic environments by these past actions. Further the set of conditions by which future operations, as listed above (oil production), have not been listed that will insure the safe development of oilfields at little or no expense to these unique arctic environments.

(5) The identification of methods, safety procedures, long term impacts, and storage areas for dredged wastes is not complete for past oil & gas development. To imagine that this proposed action will gain from these prior operations in safely and properly handling this material is unrealistic and suggests a false sense of production certainty.

(6) The opportunity of other oil & gas fields being developed in Alaska or elsewhere in America has not been explored or fully addressed. Further no mention of other energy sources is explored which would be a better long term answer for a complex earth environment. Why not consider other energy alternatives or does this plan evolve in a vacuum.

(7) The limited & critical habitat of the Porcupine Caribou herd for calving (post calving) during spring/early summer appears to be for

cont. page 2

restricted than the caribou herd habitat as has been studied along the pipeline (TAPS)

E. The loss of any opportunity to have a contiguous block of wilderness including the arctic plain/coastline and the only north american east-west mountain range, Brooks, in one management unit would be unfortunate for the very slim possibility of a productive (giant or supergiant) oil field. We see the remains of a drilling camp that wasn't productive and the scars are very long term.

These points are but a few of the major reasons that restrict my support of this proposed alternative and the Congressional approval for the 1002 lands of the Arctic National Wildlife Refuge. The selection of alternative E (wilderness designation for 1002) appears to be of a higher long term significance to the american public. Consider other alternatives might suggest additional study time of helicopter seismic crews and environmental studies over the selection of alternative A.

P.30

Thank you for your time and concern (NEPA) on this draft plan which is important to Alaskans and all Americans.

Kind Regards,

Bruce A. Amery

Box 288
Copper Center Ak
99573

14331 Osborne Street
Panorama City, California 91402

January 11, 1987

U.S. Fish and Wildlife Service
Division of Refuge Management Resources
2343 Main Interior Building
18th and C Streets, N.W.
Washington, D.C. 20240

Re: Arctic Coastal Plain Draft 1002 Report

Dear Sirs:

We feel that the Interior Department's proposal to allow oil and gas leasing along the Coastal Plain of the Arctic National Wildlife Refuge is unwise and inconsistent with sound resource management. In our opinion it is vital to long-run interests of the United States that this area be designated wilderness.

To allow oil and gas leases in this area is unsound resource management because it jeopardizes one of the greatest and diverse wilderness areas left in North America, an area recognized worldwide as one of the last, biologically intact ecosystems. To adopt any plan which would permit oil and gas exploration along any portion of the Coastal Plain directly subverts the original reasons for the establishment of the refuge, i.e.:

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(1) Conserve in their natural diversity, fish and wildlife populations.
(2) Meet international treaty obligations regarding fish, wildlife and their habitats.
(3) Protect the quality and quantity of water in the refuge.
(4) Provide for subsistence use by local residents.

Any decision that would allow any leasing for the purpose of energy development needs to be made in light of the consequences of both now and the future. Draft 1002 Report states, and we quote "...long-term losses in fish and wilderness resources, subsistence uses, and wilderness values would be the inevitable consequences of a long-term commitment to oil and gas development, production, and transportation."

We have compiled a list of the facts and the impacts associated with leasing any portion of the 1.5 million acre Coastal Plain.

The rationale provided in draft 1002 Report used to justify the full leasing is based on weak and questionable data because:

a. The report states that there is only a 19% chance that economically recoverable oil deposits exist beneath the Coastal Plain.

b. If the Department of Interior's estimated mean of 3.2 billion barrels with a 40% probability of success are considered valid it would only supply 4.17% of projected U.S demand by the year 2005 and 2.57% by the year 2010.

c. To be economically recoverable, any oil that may exist would require the same artificially high prices of oil $32-$40 per barrel that many shortsighted individuals and agencies have relied on in the past.

d. Not adequately considered in draft 1002 is the probability that alternative sources of every and future technology may substantially reduce our dependence on this resource.

e. Nowhere is any consideration given to the unsought geological consequences of continuously removing oil and the probability of magnifying geoglogical shifts in substrata.

Environmental damages associated with this proposed leasing of 1002 are many and cumulative, e.g.:

a. To quote 1002 "Accidental spills of crude oil and refined petroleum products are an inevitable consequence of oilfield development." Suffice it to say that since 1972, 23,000 spills were reported in Alaska magnifying the possibility of this type of accident.

b. There is no safe economically acceptable way to dispose of the toxic discharges (zinc, arsenic, and aluminum) which result from drilling into the earth. One needs only examine the negative impacts on water quality at Prudhoe Bay where drilling (reducing water quality and thus negatively impacting the food chain, just now becoming apparent), are the detrimental effects on bird and fish populations.

c. Any development of 1002 will be disastrous to the Porcupine Caribou herds as such development will interrupt or prevent critical calving and post-calving periods. To quote draft Report 1002 "...a population decline or distribution change for 20-40 percent of the Porcupine Caribou Herd." - "Increased noise and disturbance level displacing wildlife throughout the 1002 area..." - "Depending upon design, pipelines may create a barrier. Those adjacent to or close to active roadways would probably most impede free movement...this is of particular concern in the 1002 area because the probable pipeline haul road route would bisect the area,". In short, the development of 1002 would be mutually exclusive with the survival of the caribou who are noise sensitive and require the windy cool sea coast to avoid mosquitoes and store energy during the calving/post-calving period. Report 1002 states that, under full leasing, 72,000 acres of habitat would be lost to the caribou herds and other species.

d. Any development of 1002 will also result in habitat loss for wolves, arctic foxes, wolverines, brown bears and polar bears and over 100 species of birds which either nest, feed, molt and prepare for fall migration. It should be noted that over 300,000 snow geese, approximately 1/2 of the Pacific Flyway population, stage on the Coastal Plain in preparation for the long migration south.

e. Last, but not least, are the muskoxen and fish species in the rivers, streams and coastal waters offshore. Muskoxen, successfully

reintroduced in the late 1960s after being nearly hunted to extinction, depend on the Coastal Plain. Draft 1002 states "...major negative effects upon the muskoxen population from oil and gas development could occur, considering the present management objectives for continued population growth of the herd under natural regulation and the displacement from habitat likely to occur."

f. The need for water, to quote draft 1002 "...as much as 15 million gallons of water may be needed to drill one exploratory well." presents a serious problem as sufficient water supplies are not available in 1002. This means that the proposed development jeopardizes fish, wildlife and subsistence users by competing for limited water supplies and by reducing the quality of those limited supplies by contaminating them with heavy metals such as zinc, arsenic and aluminum.

g. The need for large quantities of gravel to build roads and drill pads on the permafrost is not available. To quote draft 1002 "Each mile of road occupies about 5 acres and requires approximately 40,000 cubic yards of gravel." "Gravel might have to be mined from upland sites, river terraces, streambeds, lagoons or other potential sites." In the past, mining gravel and transporting it has always resulted in habitat destruction and negatively impacted streambeds and thus fish and wildlife populations. In all it is estimated that 40 to 50 million cubic yards of gravel will be required to construct and maintain the proposed development.

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Other disturbing facts regarding this proposed development revolve around the Department of the Interior and the U.S. Fish and Wildlife Service as follows:

a. Why has the Department of the Interior only allowed public review of draft 1002 as a result of a successful lawsuit by a coalition of local and national conservation groups?

b. Why has the Department of the Interior spent public funds to appraise lands in order to develop land exchange agreements with private native corporations that would remove subsurface mineral rights from the public domain in the 1002 area? Why were these negotiations (kept secret) known within the department as " Project M or Megatrade?"

c. Why did draft 1002 fail to consider the cumulative effects of oil and gas development? In essence the above actions smack of wrong doing, and subvert the original intent of the congress in establishing the Arctic Refuge.

d. This nation's lack of a national energy policy which considers conservation of resources and development of more efficient alternatives sources of energy is disturbing. Since the memories of the disastrous oil embargo have faded we have resorted to old habits and methods of depending mainly on oil as a source of energy and have never made any serious long-term commitment to other energy forms such as solar power.

e. Why, when there are already 23.6 million acres of Alaska's North Slope included in the National Petroleum Reserve (a figure which excludes the vast oilfields of Prudhoe Bay or state and federal Outer Continental Shelf oil leases), is the Department of the Interior seeking to increase even more the lands committed to oil exploration?

To destroy the ecological integrity of the Arctic National Wildlife Refuge by allowing oil and gas leasing of the vital Coastal Plain when only a one-in-five-chance of economically recoverable oil is possible and then only if artificially inflated oil prices of $35 to $40 per barrel can be maintained is unwise because:

a. Present projections show it will not significantly reduce our dependence on foreign oil by more than 4.17% by the year 2010 if prices are at $40 per barrel.
b. It ignores the disposal of hazardous wastes.
c. It fails to consider the cumulative effects.
d. Destroys habitat vital to fish, plant and animal species.
e. Ignores the need of subsistence users in Alaska and Canada by destroying vital Caribou habitat and thus the Caribou.
f. Worst of all it shows a reliance on conventional energy sources and a lack of commitment to more efficient nonpolluting energy sources, a quest which has all but been totally abandoned by the present administration who seem to rely on short-run solutions while ignoring the future needs of America to develop safe, more efficient nonpolluting energy supplies if we are to maintain a healthy environment in which to survive.
g. Appears to be consistent with the administration's willingness to sell off public resources in a desperate attempt to provide deficit financing, again a poor short run solution to a government which cannot control expenditures, but whose elected members have developed for themselves a foolproof method of providing automatic raises, i.e., contrary to the spirit of the Gramm-Rudman Act.

In conclusion we would like to recommend that the Department reverse its stand of leasing 1002 in favor of alternative "E" which recommends wilderness designation for the entire Arctic Refuge Coastal Plain.

Sincerely,

John P. Fredricks

Anne Halley

FEBRUARY 3.1987

DIRECTOR
U.S. FISH AND WILDLIFE SERVICE
DIVISION OF REFUGES
2343 MAIN INTERIOR BUILDING
18TH & C STREETS, N.W.
WASHINGTON.D.C. 20240

RE: COMMENTS 1002 REPORT

GENTLEMEN:

THE FOLLOWING COMMENTS ARE BEING SUBMITTED ON THE 1002 REPORT RECOMMENDATIONS COVERING THR ARCTIC NATIONAL WILDLIFE REFUGE (ANWR). I FULLY AGREE WITH THE RECOMMENDATION TO OPEN THE COASTAL PLAIN OF ANWR TO OIL AND GAS EXPLORATION. DEVELOPMENT AND PRODUCTION. I HAVE THE FOLLOWING CONCERNS THAT I FEEL HAVE NOT BEEN FULLY ADDRESSED IN THE 1002 REPORT.

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1. EXTREME CONCERN IS EXPRESSED ABOUT THE CARRIBOU IN THIS AREA AND WHAT HAS BEEN REFERRED TO AS A "CORE" CALVING AREA. THE MAPS APPEAR TO HAVE BEEN INTENTIONALLY CUT OFF AT THE CANADIAN BORDER AS THOUGH ALL OF THE CALVING WAS IN THE U.S. AND THERE WAS NO "CORE" CALVING AREA IN CANADA. AS A MATTER OF FACT A COMPLETE SET OF CARRIBOU MAPS MAY SHOW A DIFFERENT PATTERN FOR THE SO CALLED "CORE" CALVING AREAS WITH A VERY LARGE CALVING AREA EXTENDING INTO CANADA IN MANY OF THE YEARS. THIS SHOULD BE ADDRESSED. WHEN ONE LOOKS AT THE COMPLETE CALVING AREA, THE VALIDITY OF THE SO CALLED "CORE" AREA IS OPEN TO QUESTION.

2. THE AMOUNT OF PRESENT NORTH SLOPE PRODUCTION THAT IS COMMITTED IN EMERGENCIES BY INTERNATIONAL AGREEMENTS SHOULD BE ADDRESSED. IT IS UNDERSTOOD THAT THE JIMMY CARTER ADMINISTRATION COMMITTED A PORTION OF NORTH SLOPE PRODUCTION TO OUR ALLIES IN AN EMERGENCY AND THIS AMOUNT OF PRODUCTION WOULD BE LOST TO THE REST OF OUR COUNTRY. IF THIS IS THE CASE, IT IS EVEN MORE CRITICAL AND IMPERATIVE THAT THE COASTAL PLAIN BE DEVELOPED AS SOON AS POSSIBLE IN THE NATIONAL INTEREST. IF SUCH AN AGREEMENT EXISTS, THIS MATTER SHOULD BE ADDRESSED IN DETAIL.

3. MANY STUDIES ARE CITED TO ADD VALIDITY TO THE ANALYSES. BUT THERE IS NO EXPLANATION AS TO WHY MOST CONCLUSIONS ARE DRAWN ON A WORST CASE BASIS AND A VERY LARGE PART OF THE DATA FAVORABL TO DEVELOPMENT HAVE BEEN IGNORED. MANY OF THE STUDIES CITED SHOW CONCLUSIONS MUCH DIFFERENT TO THOSE IN THE REPORT AND NO REASON IS GIVEN AS TO WHY THE RESULTS WERE IGNORED. IF THE USFWS FEELS THAT THAT DATA ARE NO GOOD, THE REASONS FOR THAT CONCLUSION SHOULD BE GIVEN, AS WELL AS TO WHY THEY FEEL THE STUDIES WHICH IT RELIED ON WERE MORE RELIABLE AND INDICATIVE OF WHAT CAN "REASONABLY BE EXPECTED" AS REQUIRED BY THE STATUTE.

4. AFTER FIFTEEN OR MORE YEARS OF STUDY AND RESEARCH AND THE EXPENDITURE OF MANY MILLIONS OF DOLLARS BY BOTH PRIVATE AND GOVERNMENT BIOLOGISTS, THE SIMPLE TRUTH IS THAT NO ONE, INCLUDING ALL OF THESE BIOLOGISTS, KNOW WHY A CARRIBOU DOES WHAT IT DOES. FOR THIS REASON, WE SEE ALL KINDS OF PROPHESIES. BUT STILL NO ONE CAN PREDICT WHAT THE CARRIBOU WILL DO WITH ANY DEGREE OF ACCURACY. CERTAINLY THE BIOLOGISTS WONT PUT THAT IN THE REPORT BUT IT NEEDS TO BE SAID!

SINCERELY.

O.K. Gilbreth, Jr.

O.K. "EASY" GILBRETH, JR.
206 DAVIS STREET
ANCHORAGE, ALASKA 99508

February 1, 1987

1819 Muskox Trail
Fairbanks, AK 99709
(907) 479-2754

TO: U.S. Fish and Wildlife Service
Attn: Division of Refuge Management
2343 Main Interior Bldg.
18th and C Sts., N.W.
Washington, D.C. 20240

Attached to this letter of transmission are my comments on the 1002 Report prepared by personnel of the USF&WS, and the Executive Summary which was written by the Department of Interior. I want to be sure that this material will become a part ofthewritten record of public comments on the 1002.

Thank you for the opportunity to present these comments, because the fate of the arctic coastal plain of the Arctic National Wildlife Refuge is of vital concern to people throughout the United States - and not merely those U.S. citizens living in Alaska.

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Yours very truly,

Celia M. Hunter

Celia M. Hunter

I would like to present the following points as my comments on the "1002 Report" prepared by the USF&WS.

1. I wish to state my preference for either a "do nothing" option, or for wilderness for the entire coastal plain.

2 I have chosen these options because I feel that the 1002 report does not address the following points:

It fails to give a full and complete assessment of the nature and the values of the plain's current wilderness status.

It does not address cumulative impacts upon the coastal plain as off-shore oil development is added to on-shore efforts.

It does not acknowledge that the Prudhoe Bay oil development has had serious problems with accidental spills of crude oil and petroleum products: 23,000 spills have been reported to DEC ranging from a few gallons to more than 658,000 gallons.

Furthermore, it fails to note that DEC has extremely limited jurisdiction over the oil industry in the matter of disposal of drilling muds, hazardous waste, and cleanup of spills, because of special exemptions accorded the oil industry under RCRA.

There is a greater liklihood that oil development on the arctic coastal plain of the ANWR under Federal auspices will result in a build-up of communities for worker's families and the facilities to service them. The State of Alaska was able to influence the oil industry to operate Prudhoe Bay as a work camp, with the wives and families of workers living in other established Alaskan communities or in the lower 48. This policy has minimized some impacts on the North Slope environment, but it is doubtful if the Federal government were the landowner, if this policy would be followed, and doubly uncertain if the Native Regional Corp. became owners of the land, and were in charge of oil development.

It does not properly address the concerns of the Canadian people of Yukon Territory who share a dependency on the Porcupine caribou herd with villagers of northeastern Alaska. No treaty exists at present between the U.S. and Canada, and sample wording of such a treaty does not offer consistently strong habitat protection on both sides of the border, as well as foolproof stipulations guaranteeing maintenance of the herd at its present strength.

The Canadian Government has not been consulted by the USF&WS in any meaningful way as set forth by Congress when mandating the preparation of the 1002 report, so that Canadian concerns for the wellbeing of the Porcupine caribou herd have not been considered.

The report fails to acknowledge the actual

number of wells already plotted by the industry on the coastal plain, which would indicate a far more serious impact than originally thought in drawing conclusions from the 1002 report. This oversight appears to be a deliberate attempt to minimize the proliferation of roads, pipelines, drilling pads, and all the other infrastructure associated with an active oil field, and the extent of the impacts it would have on the surrounding landscape.

The Executive Summary which sets forth the policy on maximum oil exploration and full leasing of the coastal plain does not take into account the findings of the biologists of the USFWS and State ADF&G biologists, in concert with biologists representing industry, which advocated absolutely no leasing or development of any kind within the core calving area of the Porcupine caribou herd.

The economics of oil development on the coastal plain at this time is predicated on oil prices of $33 to $40 per barrel, totally unrealistic price assumptions according to the experts. These prices probably won't occur until we get into the 21st century. Therefore the demonstrations of economic feasibility for this speculative oil reservoir need to be re-worked using realistic data.

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National Security and national oil independence are often given as reasons for pushing development of this field despite the high risk of irreversible environmental effects on wildlife, its habitat, and the wilderness character of the area. However, national security is not served by maximum development of any US oil reserves during this period of low priced oil. We are shutting down production in major producing oil fields of the continental U.S. in order to help raise prices by creating scarcity, as is OPEC. Wouldn't it be more sensible to declare the entire coastal plain off limits to oil exploration and development until much later, when that oil will be a precious reserve, rather than adding to an oil glut?

At the same time the State of Alaska is pushing for opening up the ANWR coastal plain, it is pressuring Congress to permit export of both oil and natural gas products from Alaskan soil. The effects of this strategy might bring down the present trade deficit by a minimal amount, but it isn't enough to warrant loss of all the other values of the coastal plain area.

In conclusion, I want to affirm my support for the continued existence of the wilderness nature of the coastal plain of the Arctic National Wildlife Refuge. I believe that the cumulative impacts of oil field development upon the present wilderness existing there has not been addressed anywhere in the 1002 report.

These impacts will be visual, noisiness, air and water pollution, plus the irreparable damage potential of trying to find

sufficient water and gravel in the coastal area for the proliferation of drill rigs, gravel pads, and roads. The negative effect upon all beholders, and particularly those visitors to the Arctic National Wildlife Refuge seeking the power of solitude, the spiritual re-charge possible from being in a huge expanse of natural landscape with no visible sign of the presence of other humans will be immeasurable.

Furthermore, when the Executive Summary glibly talks of 'mitigation' they are whistling in the dark. What will occur will be a direct loss of 20% to 40% of the vast Porcupine caribou herd (from a herd of 185,000, that would mean a loss of 74,000 animals) according to predictions contained in the biological research findings of the 1002 report. In addition, biologists predict large losses of all other wildlife and birdlife within the coastal plain area. These can't be 'mitigated' because to do so would require a refugiem area of similar carrying capacity to the arctic coastal plain, and this does not exist.

In addition, public access to the arctic coastal plain, and to all those other areas of the ANWR which depend upon transit across the coastal plain will be severely curtailed. The oil company restrictions on the movement of the public within the Prudhoe Bay complex virtually exclude all movements not work-related, even for individuals employed within the site. Even private citizens flying in and out of Deadhorse Airstrip are subjected to stringent regulations of their movements anywhere outside of the terminal buildings.

There could not be a more complete lock-up of that 1.5 million acres of the arctic coastal plain, or a more comprehensive lock-out of the public from that area, unless the area were to be turned over to the military.

Those who currently hunt in ANWR, those who float its rivers and backpack and hike the plains, river valleys and mountains, will be unable to carry on their traditional pursuits. This will mean a genuine hardship for a growing cadre of professional wilderness guiding operators, who have developed their businesses by providing guide service within the northern half of the Refuge.

This relatively small portion of the arctic north slope under the U.S. flag is the only part of that unique ecosystem we have been able to preserve. From the Canning River to the west as far as the Chukchi Sea, all of Alaska's northern coastal plain is open to oil and gas development, much of it within National Petroleum Reserve-Alaska.

Why sacrifice this small area of pristine wilderness on the gamble that the geologic structures (there is no single structure comparable to that underlying Prudhoe Bay, according to the geological section of the 1002 report) might produce a few million barrels of oil? At current and anticipated rates of oil use in the U.S., the maximum oil potential predicted would fill that demand for less than 2/3 of one year.

I would hope that Congress would note the sizable discrepancies evident between the incomplete data assembled in the USF&WS 1002 report, and the glowing optimism of the report's Executive Summary. The potential oil production is grossly over-estimated in that Summary, while the potential losses of public values is minimized.

Congress should demand congruency between the report and the Executive Summary as a minimum requirement before any serious discussion of this vital issue is attempted.

I request that the above material shall be entered into the public record of responses to the USF&WS 1002 Report to the Congress of the U.S.

Celia M. Hunter

Celia M. Hunter
1819 Muskox Trail
Fairbanks, AK 99709
(907) 479-2754

P-36

2608 Lingonberry Lane
Fairbanks, Alaska 99709

January 22, 1987

U.S. Fish and Wildlife Service
Attn: Division of Refuge Management Resources
2343 Main Interior Building
18th and C Streets, N.W.
Washington, D.C. 20240

Dear Madam or Sir,

This letter is to air my opinions and comments on the draft copy of the Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment (1002 Report) issued by the U.S. Department of the Interior, in hopes that you will give the 1002 Report and my comments both thoughtful consideration. Based on the information gathered by researchers, professionals in their respective fields, the body of the 1002 Report is informative and substantial in most areas. But in other areas, particularly some very important aspects of this report are lacking. Hopefully you as well as all members of Congress will not just read the Executive Summary and call it good. It is very clear that, for some reason, the Executive Summary is quite different from the actual body of the report, which supposedly, the Executive Summary is from.

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I oppose opening the 1002 area or any area of the Arctic National Wildlife Refuge to oil and gas leasing. My reasons are as follows:

1) Because on page 2 of the 1002 report (Executive Summary), Bill Horn states that "The evidence generated during the 18 years of exploration and development at Prudhoe Bay indicates minimal impact on wildlife resources." And yet on page 29, U.S. Fish and Wildlife biologists state "Little or no calving has been observed in the TAPS - Prudhoe Bay oil field area since about 1973 (U.S. Fish and Wildlife Service, 1982; Whitten and Cameron, 1985)." This does not mean minimal impact to me. There are more discrepancies to follow.

2) Proponents of oil and gas leasing are using the increased population of the Central Arctic caribou herd as a point to support their statements that oil development and caribou are compatible. Yet they fail to include the fact that the increase

is due to a) the Central Arctic herd (CAH) are moving out of their traditional calving grounds onto others. The same strategy would be great for the Porcupine caribou herd (PCH) except for the fact that they can not do the same - they can not because of the coastal plain's difference in topography. The close proximity of mountains which narrows the coastal plain area as you move eastward, reduces their choices for alternative and very important calving and post-calving insect-relief areas. b) their (PCH) numbers are also greater than the CAH and will therefore tend toward having less area per animal to avoid stressful situations. c) that a portion of the CAH coexists now with the PCH in the 1002 coastal plain area during the calving and post-calving seasons. d) unlike the CAH, the PCH travels a much farther distance each year, arriving at calving areas much more exhausted and therefore more susceptible to stresses. e) and finally, (page 28) "The post calving season is the low point of the annual physiological cycle when energy reserves of parturient cows are especially low. Access to insect-relief habitat and forage resources during this period may be critical to herd productivity." When one considers that 78% of the PCH core calving area is within the 1002 area than how can we think that there will be minimal impact?

3) On page 99, "On the 1002 area, obtaining water for drilling and ancillary needs such as ice roads and airstrip construction could be a serious problem and the greatest potential for effects on the physical environment." This issue is glossed over in the Executive Summary and is not sufficiently discussed in the body of the report. The mining and retrieval of these two resources could mean a considerable amount of impact when realizing the quantities necessary for drilling and considering the paucity of both immediately in the 1002 coastal plain area.

4) Because the hazardous waste problem of reserve pit fluid discharges has not been solved to anyone's satisfaction (except of course the oil company's). Even though preliminary results from U.S. Fish & Wildlife investigations have shown an increase in heavy metals and hydrocarbons and a considerable decrease in freshwater macro-invertebrate total numbers of species, diversity and abundance, North Slope oil companies continue to promote this method of waste disposal. How can this problem be mitigative in ANWR when it is already ignored as a serious problem in Prudhoe Bay oil fields?

5) Misconstrued benefits to the state of Alaska and North Slope Inupiats are constantly stated in the Executive Summary but are not supportable in the report's body of information.
a) local hire for construction and maintenance of the oil fields is an empty promise considering how hiring and employment has been orchestrated in Prudhoe Bay - little state benefit. b) revenues from taxes and leases are to be on a dif-

ferent scale for ANWR as compared to Prudhoe - little benefit to the state. c) why do we need more oil fields established when there are oil fields in Louisiana that are being capped and closed down prematurely? Why do we need more oil fields established when leases are being returned by oil companies on the North Slope? d) the agency has failed to justify their recommendation of full leasing in today's flooded lease market, while the world is experiencing an oversupply of oil, and exploratory drilling indicates that prospects for discovering even one major economically recoverable oil field on the coastal plain is only 19%. I don't consider it beneficial to lose forever this last stretch of important coastal habitat to oil companies who have based their glossy picture on unrealistic predictions (50% chance of finding 3.2 billion barrels of oil at the inflated price of $33 per barrel = overly optimistic amount of revenues to the federal economy) and who have failed to conduct an economic analysis to prove how opening the 1002 coastal plain area to oil and gas leasing can provide maximum benefits to the Alaskan and national economies, and contribute to national strategic interests over the long term.

6) Despite our international agreements for protection of the Porcupine caribou herd, the Department of the Interior has proceeded with secretive land trade proposals, and plans to substantially decrease an international resource used by subsistence users of both the U.S, and Canada - the Porcupine caribou herd, and other migrating birds, mammals and fish - while failing to notify or even include the Canadian people in this period of public testimony and comment.

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7) I find the practice of secretive land swaps by our government underhanded. Proposed land trades with certain Alaska native corporations and the State of Alaska are practically sealed into agreement by the time the public - who own the resources being traded away - are made aware of such dealings.

8)Considering that not all in-place resources are recoverable, that statistically there is a much greater chance of <u>not</u> being able to recover enough oil to make oil development in ANWR economically feasible, that inflationary oil prices were used to generate cost benefit estimates, and that "Alaskan crude oil in excess of West Coast demand is transported to the Panama Canal for shipment to other markets." (page 165), I don't agree with the Interior Department's recommendation to open the Arctic National Wildlife Refuge to full oil and gas leasing.

So, in conclusion, I don't feel that the findings of the draft '1002 report' support the Interior Department's recommendation. I hope you will consider all aspects of this issue and make a well-informed decision when the time comes. Thank you for your time.

Sincerely

Laura Jacobs

P.O. Box 317
Yakutat, AK 99689
February 1, 1987

William P. Horn
Division of Refuge Management
U.S. Fish and Wildlife Service
2343 Main Interior Bldg.
18th and C Sts, N.W.
Washington, D.C. 20240

Dear Mr. Horn and Committee:

I am opposed to the recommendation by the Dept. of Interior for full oil and gas leasing for the 1002 area of Arctic National Wildlife refuge. I recommend the 1002 area be given federal wilderness designation.

The 1002 report fails to address some important issues concerning oil production on the North Slope. Oil developers like to point to the engineering success of the trans-Alaska pipeline (TAPS) as proof of our ability to extract oil on the Arctic coastal plain without environmental and/or other negative effects. I would, however, like to point out some of the negative effects which may have been overlooked.

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Historians tend to characterize Alaska as a place of boom and bust. Certain developments, such as TAPS, have helped to create and proliferate this type of cycle in Alaska. TAPS and ANILCA changed Alaska profoundly. The construction and production phases brought unprecedented amounts of money and human resources to the state. And while, monetarily, many Alaskans have reaped the benefits of that wealth, TAPS has also left behind scars. The once tight-knit Alaska Native family has been severed, as male family members marched off to work on the pipeline, leaving behind their traditional culture and value systems. Most of the highly technical jobs were awarded to out-of-state petroleum workers, so few Natives learned skills that were useful in the long run. Quick money brought drugs, and an increase in alcoholism and prostitution to Alaska, both which remain serious problems today. Disposal of toxic wastes is yet an unsolved problem at Prudhoe Bay. The current suggestion by ARCO to inject toxic wastes into deep wells in the arctic is unacceptable to my way of thinking. Accidental oil spills continue to plague oil development and production on TAPS. In the last 14 years, there have been 23,000 reported spills, the largest at 658,000 gallons. How many more spills have gone unreported? Regardless of the existence of more spills, the reported number shows a poor industry track record for production on fragile arctic tundra.

TAPS has created a false sense of security for Alaskans. Once again, the bust cycle is upon us and we are left holding the bag. Alaska has been like a spoiled child the last 11 years, on a rampage of construction and spending as if there were no tomorrow. With development on the coastal plain, we would have yet another schizophrenic cycle to look forward to.

Likewise, the United States appears intent upon viewing energy consumption as if there were no tomorrow. The issue with the coastal plain is not whether or not we should develop it, but rather, is that development going to provide anything for our long-term future as a nation?

I would urge you, Mr. Horn, and the Division of Refuge Management, as well as Interior Secretary Hodel and President Reagan, to reexamine our energy policies. By developing the 1002 area we are looking at a short-term solution to a global problem -- the depletion of a finite energy source. By concentrating our efforts on extracting all our oil reserves, we will ultimately find ourselves in a precarious situation regarding national security and foreign dependence on oil. We should concentrate our efforts on developing environmentally safe alternative sources of energy and on improving the efficiency of our present oil-dependent technology. Finally, our government should set an example by practicing conservation of our natural resources.

Intensive petroleum-related development on the Arctic Coastal Plain is not compatible with the habitat requirements of the Porcupine Caribou herd, nor is it compatible with traditional Native habitat requirements. A pipeline traversing the coastal plain will severely interrupt the migration patterns of the herd and will interrupt critical calving activity. The very nature of caribou migration activity precludes the establishment of exact calving areas. Therefore, it would be difficult to construct manmade facilities which would not adversely affect animal populations. The displacement of caribou by roads and pipelines has already been documented by activities of the Central Caribou herd near TAPS. Breeding bird populations, fish and other wildlife populations will also be severely impacted. A pipeline and road network across the coastal plain will alter a pristine wilderness forever. Certainly, one would not gouge a scratch across a Rembrandt painting, then say it's okay because it didn't spoil the <u>entire</u> painting. The point is, this type of development will spoil the entire wilderness. A fragile ecosystem, once disturbed, takes several lifetimes to recover. There is more to be gained by establishing wilderness than by developing the coastal plain.

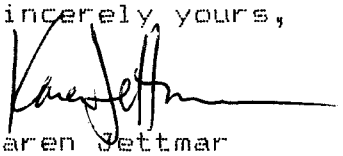
Canadian government in protecting the Porcupine Caribou herd.

ANWR was established in 1960 to protect its unique wilderness. While many would argue that we need the oil, I would argue that we need wilderness. I know, for I have felt what the Arctic does for me and I have seen the transformation in those people who have accompanied me into the Arctic. The experience of seeing tens of thousands of caribou, bounding across a peneplain free of human intervention is one which will remain in my memory forever.

In a world which becomes increasingly complex, technological, noisy and polluted, we need wilderness for our psychological and emotional benefit, as well as for the protection of unique fish and wildlife habitats. I recommend full protection and wilderness designation for the Arctic Coastal Plain and urge you to to do the same.

Thank you very much for the opportunity to comment on the draft ANWR Coastal Plain Resource Assessment.

Sincerely yours,



Karen Jettmar

P-40

Bill Horn
Asst. Sect. for Fish and
Wildlife and Parks
Div. of Refuge Management
U.S. Fish and Wildlife Service
2343 Main Interior Bldg.
Washington, D.C. 20240

Jan. 31, 1987

Dear Sir,

I would like to express my opposition to the Department of Interior's recommendations for oil and gas exploration and development and outline some of my concerns over deficiencies in your draft environmental impact statement.

The coastal plain of the Arctic Refuge has outstanding natural resorces that are of preeminent national significance. The 1002 area ought to be designated a wilderness as in alternative E to establish an international preserve following the Canadian initiative. It should provide a safe haven for important wildlife species such as caribou, muskox, polar bear, and snow geese and provide a spectrum of pristine Arctic ecosystems contained in the area.

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The draft EIS does not present a sufficient national need for the oil resource to justify the detrimental consequences that development would entail. The Department of Interior should present alternative national actions that could achieve compensating reductions and therefore negate the need to impair this important national treasure. The EPA should not be relaxing fuel efficiency standards for automobiles while the DOI uses a national security rationale to promote development. Conservation should be the first priority - it has had remarkable success at reducing our national dependence on foreign supplies and contributed to the present oil glut on the international markets.

The Department of Interior must explain why it has abandoned conservation as a priority and instead promotes profligate development.

The EIS is also deficient in a number of aspects concerning the impacts to the land. The EIS seriously underestimates the amount of infrastructure that would likely be required for full development and therefore understates the amount of gravel required. The Kuparuk Oilfield alone has 39 drilling pads and another 10 are on the drawing boards. Then there are the flare pits, equipment storage pads, construction camps, and contractor facilities. There is also a large gravel requirement for the solid core causeways for ports that the EIS did not include. Then there is the possibility of future development such as offshore oilfields requiring gravel islands and causeways at millions of cubic yards per shot. This is not an unreasonable scenario - its happening at Prudhoe Bay and must be taken into consideration. In addition to the increased gravel requirements from the facilities overlooked, there is the potential problem resulting from the projected climatic warming trend that would alter the thermal balance of the gravel pads and require increased insulation. This would require thicker gravel cover if foam insulation is not required.

1

The EIS has avoided the delicate issue of where the gravel might come from as the sources are likely to be concentrated is areas with important habitat values. For example, consider the first development area around Marsh Creek. In this area, development would require a large dock with tremendous gravel requirements, then roads, drill pads, processing facilities, and possible offshore development requiring tens of millions of cubic yards of gravel. The gravel could come from the Sadlerochit River, which is of primary importance to muskox and is the most productive drainage on the coastal plain, or maybe the Kaktakturuk, which is also important habitat, or maybe the upland outcroppings of Tertiary gravels. The gravel requirement is huge and the supply is limited requiring concentrated devestation in important areas. Even mining in the lagoons would create temperature and salinity problems detrimental to fish populations. The consequences of the gravel demand appear much more drastic when the sources must be identified beyond bland generalizations that perhaps 500-750 acres might be affected.

Air pollution must be identified as a problem. It has recieved very little attention at Prudhoe Bay, only because it is in a remote area. Prudhoe Bay operators are permitted by the Alaska Dept. of Environmental Conservation to discharge 90,000 tons of NOx per year. Other sources of pollutants, including heavy metals and other toxic elements are the Borrough incinerators. The distribution, fate, and impacts of this air pollution need to be studied. Further development in ANWR would contribute to pollution of the Arctic basin, an international problem for which we must also be responsible . The arctic pollution may be of significance to solar energy absorption at the poles and consequently to global climate. Such enormous emissions are incompatible with a wildlife refuge.

The EIS needs more effort in identifying the occurrence and fate of liquid and solid wastes generated during oilfield development. There are many toxic compounds used in drilling and processing and these need to be accounted for. One of the largest concerns is the reserve pit fluids. Experience in NPRA has shown that with time the reserve pits are breached, usually from melting and subsidence underneath the containing berms, and their contents leached or eroded onto the adjacent trundra. The main toxic elements are salts but may also include some heavy metals. Allowing toxic wastes in the refuge is incompatible with wildlife protection.

Finally, the DOI must take steps to identify areas with critically high ice contents. During the seismic exploration program, drillers encountered massive ice beds, up to 60 to 80 feet thick with only a few feet of protective soil mantle, in some locations. These are extremely sensitive areas to disturbance and must be identified and avoided. Once thermal erosion starts in such massive ice beds, stability would be very difficult to achieve and in the worst case whole hillsides might erode before equilibrium is achieved. This is all the more

2

critical given a projected climatic warming trend.

These concerns, along with the important wildlife consequences described by others, should be given further consideration by the Department of Interior.

Sincerely,

Tonne Jorgenson

2332 Cordes Way
Fairbanks, Alaska 99709

P-42

January 30, 1987

U.S. Fish and Wildlife Service
Attn: Division of Refuge Management Resources
2343 Main Interior Building
18th and C Streets, N.W.
Washington, D.C. 20240

Greetings:

I wish to comment on the proposed options regarding oil and gas exploration and development on the coastal plain of the Arctic National Wildlife Refuge (ANWR). My comments are made as a private citizen, however, I have worked professionally as a wildlife biologist in Alaska for the Alaska Department of Fish and Game, the U.S. Fish and Wildlife Service and the University of Alaska for a total of 34 years. Major focus of my professional work has been research on ungulate species, primarily caribou, muskoxen, deer and moose; and investigation of the effects of northern development on fish and wildlife and their habitats. This has included work in northern Canada, Greenland, Scandinavia and the Soviet Union.

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The primary purpose of National Wildlife Refuges is the protection and management of fish and wildlife habitats to assure the continued well-being of fish and wildlife populations and their sustained productivity. Additionally, the unique wilderness values of the Arctic National Wildlife Refuge were a major consideration in the original establishment of its precursor, the Arctic National Wildlife Range. Secondary, and very important purposes of the ANWR are to provide for the subsistence and recreational use of its fish and wildlife resources. Uses of the ANWR for other purposes, such as oil exploration and development, are clearly of lower priority than the primary fish and wildlife-related goals and uses. It is important that this ranking of priorities of ANWR be held in perspective when considering proposed oil and gas leasing.

Of major concern are the likely effects of oil and gas leasing and subsequent possible development on the fish and wildlife populations and their habitats in the 1002 area. The effects are dealt with in the draft 1002 report (Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment, November 1986). It is obvious that oil and/or gas development and production will detrimentally impact directly on fish and wildlife resource values of the area even with the constraints of strict environmental regulations.

Caribou, because of the importance of the calving grounds and use of, and access to, insect relief habitat, would be particularly vulnerable to detrimental effects of petroleum development. The very high density of caribou of the Porcupine Herd in the area and the important role that calving and insect relief habitat play in facilitating recruitment to the population and in allowing for optimization of growth and body condition of the caribou make it very unlikely that mitigation of the effects of oil development is possible. Extrapolation

from experience gained with Prudhoe Bay and related oil field development and the Central Arctic Caribou Herd is of limited applicability to the 1002 area because of the lower density and resident nature of that herd in contrast to the Porcupine Herd. Nevertheless, Central Arctic Herd caribou have largely discontinued calving in the Prudhoe Bay oil field since its development, and access to coastal insect relief habitat is greatly hindered by pipelines, roads and other oil field facilities. Of pertinent interest here is experience from the very large Taimyr Peninsula Caribou Herd in the Soviet Union that, when confronted by a large diameter gas pipeline in the 1960's that had been built across it's migratory path, did considerable damage to range vegetation over a large area adjacent to the pipeline through trampling and overgrazing, while being delayed in crossing the pipeline.

An ethical question is raised with regard to the threat posed to the Porcupine Caribou Herd through petroleum development when this herd is an important subsistence base for Athabascan Indians in Arctic Village and several other villages in Alaska and to a lesser extent for the Inupiat people of Kaktovik. The value of the subsistence lifestyle to these people cannot readily be converted to monetary values for comparison to the short term dollar value of postulated petroleum reserves. Similarly, because the Porcupine Herd is an international resource that provides a subsistence base for the Athabaskan people of Old Crow in the Yukon Territory, as well as other native villages in the Northwest Territories on the lower MacKenzie River, the United States has a responsibility to maintain the productivity of this herd that transcends our own national borders. The United States has played a leadership role in encouraging other nations to respect the international nature of fish and wildlife populations that migrate across international borders, and to assure that the actions of one country do not jeopardize the resources upon which other countries may be dependent. This principle applies equally to migratory waterfowl, salmon migrating up the Yukon River through Alaska into Canada and to caribou of the Porcupine Herd.

Experience with the Forty-mile and Western Arctic Herds in Alaska, as well as with other herds in Alaska and other circumpolar areas, indicates that when herd size declines range use patterns change, with a reduction in total area used and discontinued use of some migration routes. Thus, a substantial reduction in the size of the Porcupine Herd resulting from the impacts of petroleum development on the coastal plain would be expected to bring about corresponding changes in range use patterns. The consequences of such changes would very likely be reduced availability of the caribou to subsistence hunters in both Alaska and Canada even though herd size might be adequate to sustain traditional subsistence harvest levels.

Predicting the consequences of development activities on caribou is much more difficult than for other ungulates, such as deer and moose, largely because of their migratory nature that extends their ecological relationships over several ecosystems. Additionally, their well developed sociality, vulnerability to insects and dependence on winter forage that must be excavated from beneath the snow cover are also unique to this species. Inspite of the generally well designed studies carried out on caribou in the 1002 area during the five years of biological baseline investigations, several aspects of the biology and ecology of caribou are not sufficiently understood to enable an in-depth assessment of the possible impacts of petroleum development. The calving grounds, although delineated, have not been adequately investigated in relationship to their use by caribou to provide answers to questions of their specific characteristics that have made them so attractive to cow caribou over

the centuries of their use. Quantitative data is also lacking on the energetic and nutritional costs of insect avoidance, as well as to how access to insect relief habitat may influence levels of parasitism in caribou. The complex interrelationships between caribou, weather, harassing insects, vegetation type and terrain, although known to exist, cannot, with our present level of knowledge, be integrated into a reliable predictive interactive model.

It is particularly frustrating to both the engineers who design development projects and the ecologists who attempt to minimize or mitigate the effects of these projects on wildlife, that the complexity of living systems is magnitudes greater than the seemingly complex development projects that may affect them.

It is quite evident that there is insufficient knowledge of the ecological relationships of caribou in the 1002 area at the present time to enable an adequate assessment of the consequences of the likely development scenarios. Biologists familiar with caribou have only been able to make "educated guesses" about the consequences of the proposed petroleum developments on caribou. In view of this, the only responsible recommendation with respect to leasing for oil and gas exploration and development in the 1002 area is to exclude those areas of known importance to caribou for calving, post-calving and insect avoidance use. At some future time, if the necessary research has been done, the knowledge may be available to plan for development in these critical habitat areas in such a way as to avoid or greatly minimize the impacts upon caribou.

Another ungulate species resident in the 1002 area that would be affected by oil and gas development is the muskox. The muskox was reestablished in the coastal plain of the ANWR through introductions made in the late 1960's. The muskox was extirpated from northern Alaska in the late 19th century and old skulls have been found on the tundra in the 1002 area from these previous populations, testifying to their earlier presence there. Their reestablishment in historical habitat in the ANWR through the joint efforts of the U.S. Fish and Wildlife Service and the Alaska Department of Fish and Game is an outstanding success story in the history of wildlife conservation.

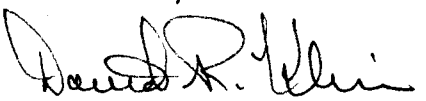
Research we have completed on the patterns of habitat selection and use of these newly established and expanding muskox populations indicate that the riparian habitats along many of the major stream drainages of the coastal plain are preferred by the muskoxen during much of the year. The vegetated gravel bars and stream banks of these habitats have high plant diversity and productivity as a consequence of their annual flooding, which thaws and heats the soils and adds nutrients to them annually. The quality of plants in riparian habitats as forage is understandably high and the quantity is also high in contrast to the adjacent tundra.

The potential conflict between muskoxen and oil and gas development in the 1002 area focuses on the importance of stream or riparian areas to the muskoxen as a foraging habitat, while at the same time being of importance to the oil industry as sources of gravel and for transportation corridors. Because muskoxen are resident in the riparian areas or immediately adjacent to them for much of the year it may not be possible to plan disturbing human activities that might take place in these areas, such as gravel extraction or exploratory drilling, so as to occur when the muskoxen are not present. Additionally, gravel extraction in those stream drainages with high production of forage used by muskoxen will result in loss of high quality riparian habitat.

I have limited my comments to potential conflicts between petroleum development in the 1002 area and caribou and muskoxen because of my close familiarity with these two species in the area. There are obviously many other fish and wildlife species there that may be adversely affected by development activities and these conflicts I am sure will be addressed by others who have knowledge of them.

In conclusion, it seems obvious that the risks of damage to fish and wildlife habitats and of losses of fish and wildlife resource values that would be associated with petroleum exploration and development in the 1002 area are too great to justify opening the area to leasing at this time. With increased knowledge of the ecology of fish and wildlife in the area in the future, with reduced impacts of new technologies for petroleum extraction in the Arctic that will undoubtedly be developed over time and with the greatly increased value of petroleum products that will occur in the future, it is most prudent to delay leasing in the 1002 area until some time in the future when it can be fully justified.

Sincerely,



David R. Klein
2039 Weston Drive
Fairbanks, Alaska
99709

cc: Senator Bennett J. Johnson,
Senate Energy and Natural Resources Committee
Henry Cole, Science Advisor to the Governor of Alaska

Institute of Arctic Biology
University of Alaska
Fairbanks, AK 99747
6 Feb, 1987

U.S. Fish and Wildlife Service
Attn: Division of Refuge Management
2343 Main Interior Building
18 and C Streets NW
Washington, D.C. 20240

To whom it may concern:

I would like to take this opportunity to comment on the draft Coastal Plain Resource Assessment Report to Congress (1002 report) concerning oil and gas leasing in the Arctic National Wildlife Refuge (ANWR). I have spent at least part of four summers in the Arctic Refuge, including two summers of research on bird populations at the Canning River delta and my report to USFWS is cited in the 1002 report. In addition, I have spent two summers involved in research at Prudhoe Bay concerning development impacts on the terrestrial environment. Thus, I have some familiarity with the area and the issues as well as a citizen's concern for the future of our public lands.

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The report's recommendation to allow full leasing of the 1002 area is clearly not supported by the evidence presented in the body of the report. The petroleum potential of the area is stated to be highly uncertain. In reference to the Ellesmerian rock sequence, the report states (p. 54) "The presence or absence of these rocks in that area greatly affects the petroleum potential because very large structures occur in that area; these rocks include the main oil-producing reservoirs in the Prudhoe Bay area. If most of the Ellesmerian rocks are missing in most of the 1002 area, the assessment number would be reduced considerably. Drilling one or two wells in critical areas would resolve this question." Here is a clear statement that the data are inadequate to provide a prediction of petroleum potential of any precision.

One of the most glaring deficiencies of the 1002 report is its failure to review available data on ecological impacts of arctic oil development. With the possible exception of caribou research, apparently only a token effort was made to review the numerous impact studies conducted in Alaska over the last decade. In spite of this omission, the Secretary's Recommendation claims that "most adverse environmental effects would be minimized or eliminated through mitigation based on the vast amount of information and technology acquired during the development of the Prudhoe Bay area ...". This claim is completely unsubstantiated by data presented in the report and can only be interpreted as wishful thinking on the part of an administration favorably disposed toward development regardless of available information on impacts. In fact, there is a large body of

pertinent impact-related research conducted at Prudhoe Bay and on the Arctic Refuge that is not even cited in the 1002 report. A partial list of relevant references ignored by the 1002 report is attached. The review of aquatic/fisheries studies was particularly disappoining, considering the effort and funds expended at Prudhoe Bay in this area. Impacts are not even considered for such important species of concern as arctic cisco. Many of the studies listed were conducted on ANWR, some by USFWS, and all are undoubtedly familiar to the field staff of USFWS in Alaska. It is difficult to understand why the report's authors proceeded with such disregard for pertinent information and apparently without the benefit of the expertise among USFWS staff most familiar with the area and issues.

The attached list of references represents only the tip of the iceberg -- there are undoubtedly many other studies with which I am not familiar, and there are studies currently in progress (related to the development of the Lisburne and Endicott fields at Prudhoe Bay) for which I have no references. There are also numerous proprietary studies conducted by industry, which are not generally available to the public. Industry might reasonably be expected to share the results of these studies if they would provide Congress with additional insights into ecological processes and environmental problems associated with arctic oil development.

Many of the studies that <u>are</u> cited in the report are inadequately summarized in the literature review. I have neither the time nor expertise to review this in detail but can provide examples of omissions which I suspect are rampant. For example, Troy (1984) is cited briefly on p. 132, but none of the analysis ofthe effects of drainage alterations and impoundments conducted by the Waterflood Monitoring Project is mentioned. On the same page, Murphy et al. (1986) are cited in reference to Glaucous Gull populations, but the main focus of their study (impact-related studies on waterfowl) is never mentioned.

The report is inadequate in its review of what we have learned from the Prudhoe Bay experience. It is equally important for a report of this nature to realistically assess what we <u>don't</u> know about the impacts of oil development on the Alaskan arctic. The report utterly fails to give any indication of the data gaps and the many uncertainties remaining in predicting impacts. Instead, the Secretary would have us believe that we are fully capable of predicting and mitigating the entire array of potential environmental problems. Furthermore, the report fails to review the efficacy of the various mitigation procedures that have been tested at Prudhoe Bay. Finally, no effort was made to realistically assess the enforcement problems and compliance with existing regulations at Prudhoe Bay. In summary, the report obscures the difficulties inherent in predicting environmental impacts, devising appropriate mitigation procedures, and the practical difficulties of insuring compliance with environmental regulations. Without a realistic assessment of these issues the discussion in Chapter VI cannot be considered seriously as a guide to decision-making. The cursory attention given to existing relevant information and expertise on development impacts is mystifying. Against these deficiencies, the Secretary's claims that "most adverse effects would be minimized or

eliminated through mitigation..." and that "unnecessary adverse effects would not be allowed to occur" are inexcusably misleading.

In summary, the wildlife impacts of full leasing are to a great extent unpredictable. In contrast, the impacts to the wilderness qualities of the 1002 area are highly predictable and are aptly summarized on p.131, " The wilderness value of the coastal plain of the Arctic Refuge would be destroyed...". The issue of wilderness value is consistently underplayed in the report as a whole, and virtually ignored in the Secretary's Recommendation. This is particularly inappropriate given the stated purpose of the establishment of the refuge to preserve "unique wildlife, wilderness and recreational values".

Given the certain destruction of wilderness values and the unpredictable effects on wildlife populations, the uncertainties in the geologic data are a serious hindrance in making a rational decision on ANWR. The results contained in the report might justify limited and carefully controlled further exploration as a rational alternative (Alternative C) that would provide the Congress with the facts needed to make an informed decision on ANWR. There is certainly no justification for leasing contained or implied in the data presented. Had a wilderness review been conducted for the 1002 area, ample support for Alternative E (wilderness designation) would have been found. I believe this is the most appropriate designation for the 1002 area, given its unique and irreplaceable wilderness values. It is conceivable that in the face of overwhelming national need, high and relatively certain oil potential, and thorough and conscientious commitment to preserving biological resources, a decision for development would be jutified. None of these conditions are demonstrated by the 1002 report. The report is flawed in its preparation and its unsubstantiated conclusions betray a bias for development contrary to the intent of Congress in requesting the study.

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Sincerely,

Philip Martin

Philip Martin

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FEB 6, 1987

TO THE U.S. FISH & WILDLIFE.

DEAR SIRS-

ENCLOSED PLEASE FIND MY COMMENTS ON THE DRAFT REPORT, " ARCTIC NATIONAL WILDLIFE REFUGE, ALASKA, COASTAL PLAIN RESOURCE ASSESSMENT.

I WOULD LIKE TO STRONGLY SUPPORT ALTERNATIVE B IN THE REPORT. I BELIEVE DEVELOPMENT OF ANWR'S POTENTIAL OIL & GAS RESOURCES IS IN THE BEST INTEREST OF THE U.S. AND ALASKA. I BELIEVE THE ENVIRONMENTAL EFFECTS HAVE BEEN GROSSLY OVERSTATED & A MORE BALANCED VIEWPOINT IS REQUIRED.

AS A SENIOR ENVIRONMENTAL COORDINATOR WITH ARCO ALASKA INC. I BELIEVE I HAVE A KNOWLEDGEABLE POSITION FROM WHICH TO OFFER SUGGESTIONS & CHANGES TO THE DRAFT REPORT. THESE COMMENTS ARE MY OWN & ARCO HAS SUBMITTED ITS OWN COMMENTS SEPERATELY.

MARK MC DERMOTT

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GENERAL COMMENTS ON ENVIRONMENTAL EFFECTS

CHAPTER VI
1002(h) Report

Comment #1 - The "core calving area" is assumed to be critical to Porcupine Caribou Herd (PCH) herd demographics and therefore any displacement from this area would necessarily impact productivity.

The "core calving area" for the PCH has been arbitrarily defined as an area where high density (50 caribou /km^2) calving has occured for at least 5 of the last 14 years. For much of this area high density calving has occurred in 9 of the 14 years, which still leads to the obvious conclusion that calving occurred outside the "core calving area" anywhere from 5 to 9 years. An important aspect of the "core calving area" is what percentage of all calving areas it represents. From Table VI-5, the total "core calving area" is 311,000 acres, while total concentrated calving occurs over 2,117,000 acres. Thus core calving represents 15% of all concentrated calving areas, and would represent an even lower percentage if peripheral calving areas were considered. The conclusion is that the PCH has successfully calved over a very large area in the past and while the core area is obviously important to the herd, it is not necessarily critical.

The assumption is made that areas outside the "core calving area" have reduced habitat valves or higher exposure to predators. If this were so then reduced productivity should be apparent from years that the herd used these alternate areas. This has never been demonstrated and it is known is that the herd has grown steadily since the early 70's.

In considering the effects of displacement from traditional calving grounds, examples can be drawn from the literature. Davis et al., (1983) report that "in 1982, the Delta Caribou Herd was apparently precluded from calving in its traditional core areas because of persistent snow cover and instead used an alternate calving area roughly within the area burned in 1979, even though snow conditions were as favorable in unburned areas northeast, northwest, and west of the 1979 burn, where some calving occurs in most years. Calving in 1982 was quite successful, which suggests that caribou may have considerable flexibility in their habitat requirements." The Central Arctic Herd and Taimyr Herd in Russia also provide examples where industrial activity has had no measurable effect on herd productivity. Miller and Gunn (1986) review other case histories of natural displacement in Alaskan caribou herds.

Skoog (1968) and Bergerud et al. (1984) believe that caribou are not habitat limited. Shank (1979) states that.

> "Stating that animals have no adequate habitat into which they can disperse is tantamount to saying that the population is being density controlled. In fact, northern large mammals (excepting sheep) are most likely not often resource limited suggesting that at least some degree of distributional alteration could be accommodated without drastic demographic consequences."

Comment #2 - Behavioral responses are consistently equated with demographic responses. That is, if a negative response is observed in an individual or group, then the species productivity has also been negatively impacted.

Shank (1979) discusses this confusion directly. He defines a behavioral disturbance "as any behavioral response to human-caused stimulus which results in actually or potentially reduced reproductive fitness. If human action results in an animal acting in a manner in which it would not otherwise have acted and if this alteration is thought to cause a reduction in that individual's capacity to produce a viable offspring, then behavioral disturbance has occurred. The issue is confused by the occasional unavoidable use of the term 'disturbance' to describe the human-caused stimulus itself."

"Another aspect of behavioral disturbance is that the response must cause the reduction in fitness rather than the stimulus itself."

"Behavioral disturbance becomes manifested in animals in three distinct analyzable modes: overt behavioral response, physiological response, and demographic responses."

There is a consistently blurred distinction in the report regarding what is a behavioral response and what is a demographic response. The discussion of effects on caribou and muskox are excellent examples of this confusion. In both cases observed behavioral responses (flight reactions or "displacement") are used to estimate areas of affected habitat. Although habitat is not a limiting factor for either species, these avoidance behaviors are then equated to demographic responses. As Shank (1979) states:

> "What is commonly forgotten or ignored...is that disruption of normal behavior is is not necessarily bad in itself. For behavioral disturbance to be of practical concern, it must be demonstrated that it does, or does not, have demographic consequences. Failure to provide this link is, without question, the major failing of current research."

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Comment #3 - The definition of environmental effects on biological resources is inadequate.

Several problems exist with the definitions of environmental effects on biological resources in Table VI-1.

1. There is a fundamental difference between the definitions for "negligible" and "minor" and those for "moderate" and "major". For negligible and minor the effect measured is a change in population or distribution or habitat quality or habitat availability. For moderate and major the definition calls for changes in habitat availability or quality which lead to a change in abundance or distribution. Habitat is linked to abundance, which is not the case for many of the species discussed in the report. The 4 levels of effects should occupy a smooth continuum, not alter in the middle.

2. As mentioned previously, the definitions for moderate and major effects tie together habitat and population effects. The implicit assumption is that any alteration of habitat will result in a population effect. While this may be true for some species, it varies widely for those considered by the report. As an example, polar bears are thought to be maintaining a stable population and the removal of a few denning sites could adversely effect the population. Muskoxen are increasing their population at very high rates, such that major changes would have to be made in their habitat to produce a population effect. These two cases cannot be distinguished given the current definitions.

These definitions also lead to the questionable practice of combining population declines and redistributiions. The effects on many species are summarized as "a moderate change in population or distribution". These two extremes need to be distinguished, not lumped together.

Another drawback to the current definitions is that there is no quantification of the population effects. In the cases where populations are high (arctic ground squirrels) or habitat is not limiting (muskoxen), a "moderate" change in habitat could yield no population effect yet the overall effect on the species is concluded to be "moderate". As an example, one ground squirrel colony could be covered by a gravel pad, yielding a local change, one that is long term, and one that results in a redistribution of squirrels. By definition this would be a "moderate" impact on ground squirrels in the 1002 area. Clearly something is wrong with a definition that leads one to a "moderate" impact on a common species such as squirrels by eliminating one colony.

3. Many of the above cited problems with the biological effects could be remedied by separating habitat effects from population effects and having a category for each. Thus under biological resources there would be 4 levels of effects for population in one subsection, and 4 levels of effects on habitat in a separate subsection. This would greatly increase the flexibility and accuracy of describing effects on the wide variety of species considered in the report.

Comment #4 - Declines in all major predators are assumed to occur due to the hypothesized decline in caribou population.

The discussions of wolves, brown bears, wolverines and golden eagles all predict a "moderate" impact, largely due to a hypothesized 20 - 40% decline in the PCH. This reasoning is flawed for several reasons:

1. No alternative prey species are considered.

2. The 6 - 8 weeks of PCH availability to predators on the coastal plain would have to be a critical period for all species where the predator relied almost entirely on caribou.

3. No consideration is given to the fact that the high numbers of the PCH relative to the low numbers of predators indicates that the predator - prey system is not in a stage of dynamic equilibrium where a small change in one population leads immediately to a change in the other.

As an example of the problems with the assumption that PCH numbers are now limiting the 4 predators discussed, wolves will be examined because wolf-caribou systems have been studied more extensively. The logic behind the argument applies to the other predators as well.

Population estimates for the PCH ranged from 100 - 106,000 for most of the 70's, which represents a decline slightly greater than the maximum 40% predicted by the 1002 report. Yet wolf numbers in the 1002 area are not estimated to have been significantly lower than the report's estimate of 5 - 10 wolves, and in fact may have been higher. "Wolf predation on caribou in the ANWR study area during calving and post-calving is probably low." (USFW 1982) It is fairly safe to assume that wolf populations on the 1002 area have been held artificially low through rabies and legal and illegal hunting and that PCH population size is not a dominant factor.

Keith (1981) shows a direct relation between wolf population density and ungulate population biomass. However, the theory behind this relation cannot be applied to the 1002 area because:

1. Wolf densities are quite low relative to the available biomass of the PCH, such that Keith's relation does not hold. This suggests other factors control wolf populations in the 1002 area.

2. The PCH are only seasonally available to resident wolves, and then at a time when wolves are tied to denning sites to the south of the 1002 area.

3. The availability of the PCH occurs in summer, not during the more critical winter period, when resources are more scarce and wolves have fewer prey alternatives.

For the reasons discussed above it is not reasonable to assume that declines of 20 -40% of the PCH population will have any effect on wolf numbers. Negligible to minor impact on other predator species would also be expected from the hypothetical worse case of a 20 - 40% decline.

Comment #5 - The standard for judging environmental effects is not discussed. Based on numerous examples documented in the specific comments section, the standard used in the 1002 report is "worst case". NEPA as now amended currently requires that effects be "reasonably foreseeable".

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It appears that the standard frequently used in the report for judging environmental effects in the face of incomplete or unavailable information is worst case analysis. In many of these instances the use of worst case analysis is inappropriate, particularly without further justification and clear evaluation of other reasonable approaches and more probable outcomes.

In a recent rulemaking (51 CFR 15618 et seq. April 26, 1986), CEQ amended its regulations (40 CFR 41502) governing the preparation of environmental impact statements where information is incomplete or unavailable. In that rulemaking CEQ greatly restricted the use of worst case analysis to those situations where such analysis is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason. Moreover, where worst case analysis is used, all relevant credible scientific evidence must be evaluated using alternative theoretical approaches or methods generally accepted in the scientific community. (40 CFR 1502.22(b)(1)-(3). The report often ignored this reasoned approach to evaluating impacts.

While the NEPA regulations are not specifically made applicable to this legislatively mandate EIS, we believe that the approach set forth in CEQ regulations should be followed.

SPECIFIC COMMENTS ON ENVIRONMENTAL EFFECTS

CHAPTER VI
1002(h) Report

Pg. 95, para 8. "In Alternative A, three portions of the 1002 area.....are all predicted as being developed, and the assessment considers all three areas as developed concurrently... Therefore, the analysis and consequences may represent a higher level of development than may actually occur at any specific time if the area were opened to leasing."

We would agree that the analysis represents a worst case scenario and therefore most subsequent environmental effects outlined in Chapter VI are overstated from what is likely to occur.

Pg. 98, section on Effect on Physical Geography and Processes.
There are no mitigation sections in the subheadings:

"Consequences of Geological and Geophysical Exploration"
"Consequences of Exploratory Drilling"
"Consequences of Development Drilling"
"Consequences Resulting from Construction of Roads, Pipelines, and Marine and Production Facilities"

Mitigation sections are found in the remaining two main subheadings in this chapter: "Effects on Biological Environment" and "Effects on Socieconomic Environment", thus it would seem appropriate to include mitigation sections in the "Effects on Physical Geography and Processes." This is particularly true in light of the very large body of knowledge that has been developed over the past two decades on this subject. There are literally hundreds of proven mitigative techniques commonly applied on North Slope oilfields by virtue of the fact that arctic environmental engineering is in a mature stage of development.

One small example is contained in the comments regarding pg 100, paragraph 4.

Pg. 99, para. 3. "Effects of seismic exploration generally result from overland travel of seismic trains. The effect is to the tundra which, if broken or scarred, can cause thawing of the upper ice-rich permafrost during the succeeding summers. Such thawing in flat areas will cause ponding at the junction of the ice-wedge polygons, altering the appearance of the tundra landscape. However, if thawing occurs on sloping ground, erosion can occur. If that erosion and its products terminate at a stream, local silting may result."

Although in the previous paragraph it is stated that "effects of additional seismic exploration would be similar to the effects of the seismic surveys during the winters of 1983-84 and 1984-85", it is not stated what those effects were. Paragraph three then lists all the potential ill effects without the balance of stating what actually occurred during the previous two winters. A summary of the actual results, taken from Felix and Jorgenson, 1985 and Felix and others, 1986a and b, should be included in this section.

Pg. 99, last para. "...traces of oils used during drilling to 'slicken' up the drill bit;..." is not in keeping with current drilling technology utilized on the North Slope. Fresh water based mud systems are currently used to drill wells on the North Slope.

Pg. 100, para 1 & 2. "Preliminary results of those investigations show gradients of increase in pH, salinity, alkalinity, turbidity, and sediment loads from control ponds to ponds adjacent to reserve pits (R.L. West and E. Snyder-Conn, unpublished data). Trends of increase in the vicinity of reserve pits were also shown for heavy metals such as aluminum, barium, chromium, zinc and arsenic, as well as for certain hydrocarbons...."

We believe it is inappropriate for the USFW to cite an unpublished draft report that was the subject of widespread criticism based on its lack of technical merits Presumedly one of the reasons this report has never been finalized nearly two years after its draft release is that the deficiencies were recognized by USFW Management. the West and Snyder-Conn reports basic conclusions, cited in the draft 1002H report, that were derived from the misapplication of statistical analyses. Based on the ANOVA analysis performed in West and Snyder-Conn's draft report, they could not have concluded that ponds adjacent to reserve pits were significanly different that control ponds because they did not apply the statistics to answer that question. What they did conclude by their analyses, based on the comparison they carried out, was that reserve pits differed from control ponds. The USFW found 78% of their comparisons to be statistically significant (21 of 27 comparisons). In a re-analysis of the same data, ARCO Alaska Inc. found 16% of their comparisons to be significant (3 of 19 comparisons). The difference was that USFW compared reserve pits to control ponds, and ARCO compared ponds near reserve pits to control ponds. There is no question that reserve pit water quality differs from natural ponds. The appropriate question is how natural ponds near reserve pits differe from control ponds. USFW has not adequately analyzed the data to answer this question.

There are numerous other major deficiencies in West and Snyder-Conn's draft report that have never been corrected, . Because of these problems, we recommend deleting any references to West and Snyder-Conn's report or their conclusions.

Pg. 100, para. 3. "There are two approaches to abandoning an exploratory well reserve pit: 1. Leave it as is."....

Recent studies in the Canadian Arctic (French, 1985) and in the NPRA, Alaska (Nuera Reclamation, 1986) document the minor environmental effects of abandoning a drilling reserve pit without closure. However, it is current industry practice to "button up" the reserve pit adjacent to exploratory wells. All recent state and federal lease sale stipulations require complete closure and containment of reserve pits. Therefore, for the purposes of discussing future options for reserve pit closeout on the Coastal Plain, option #1 is not relevant and should be deleted.

Pg. 100, para. 4. ....."Therefore, this method requires remobilizing construction equipment, opening a gravel pit elsewhere, and hauling in material to fill in and "mound up" over the reserve pit area."....

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Recent experience from ARCO's Brontosaurus well site (NPRA) and other recent exploration wells on the North Slope (Larry Dietrick, AK Department of Environmental Conservation (ADEC) personal communication) do not support this statement. The Brontosaurus well was drilled approximately 50 miles S-SW of Barrow during early 1985 from an ice pad. The reserve pit was excavated below the level of permafrost and the tundra mat was scraped off and stockpiled separately from the mineral soil. After operations concluded the reserve pit contents were melted, pumped dry and injected down the well. The mineral soil was replaced and then covered with the organic rich tundra mat. This resulted in a crown over the reserve pit of 2-3 feet above ground level. An August 1986 inspection by ARCO, ADEC and the North Slope Borough measured successful freezeback of the pit contents with virtually no slumping or ponding problems. Natural revegetation was already occurring 18 months after closeout. This technique is considered to be "state-of-the-art" by ADEC. Similar experiences from other recent wells would indicate that a) this method is a very effective mitigation technique, b) remobilizing equipment is not necessary, c) opening other gravel borrow pits is not necessary, and d) the material will revegetate naturally and rapidly.

Pg. 100, para 6. "1. Denuding of a 10-acre area of tundra for 10 years or more, and the long term (many tens of years) creation of a 2 to 3 acre rectangular appearing pond."

Recent experience from the Brontosaurus well and other North Slope exploration wells drilled from ice pads do not support the conclusion that this result is an "unavoidable consequence". The Brontosaurus site after 18 months has an affected area of only 1.5 acres, which represents the reserve pit cap. The four acre ice pad has had virtually no effect on the tundra vegetation and the areal extent of the pad is not recognizable from the air or ground. A pond is a result only if the reserve pit is not capped.

Pg. 100, para 8. "The almost unavoidable minor oil leaks and spill.....which would contaminate the tundra and, possibly, the aquatic environment...."

"Minor" needs to be quantified. The statement could be generally correct for spills less than 10 gallons. Some of these spills might go undetected and reach the tundra or aquatic environment during spring break-up. However, spills of oil are easily noticed on ice and snow and rarely escape detection, even in quantities of less than a gallon. Further, these spills are easily and routinely cleaned up and disposed of properly. All that is required is that the snow/oil mixture be scooped up by shovel or front end loader. Thus the actual amount of spilled oil that lasts until spring is exceedingly minor.

Pg. 100. para. 9. "Gaseous and particulate emissions which temporarily reduce air quality in the locale".

"Locale" needs to be quantified, since the affected area from a single drilling rig is minimal and the effects negligible.

Pg. 101, para. 1. "The most disruptive and the most visually displeasing (for thousands of years) places from which to obtain gravel are the upland areas."

Abandoned upland gravel borrow pits would either flood naturally, or could be purposely flooded, to create an artificial lake.

Pg. 101, para. 1 "Today, the untrained observer can scarcely find those (NPRA) borrow sites."

We would support the evidence that carefully engineered and environmentally sensitive gravel borrowing can minimize impacts and create only temporary (10 year) disturbance.

Pg. 101, para 2. "The large quantities of water required for development drilling on the 1002 area are not available."

Although the proposed solution of flooding streambed gravel borrow pits is a well reasoned and feasible alternative, it is by no means the only one. Water is potentially available from large underground aquifers (likely in a geological environment containing oil fields) or seawater could be pumped via pipeline from the coast, similar to the way waterflood operations are carried out at Kuparuk and Prudhoe Bay.

P. 101, para 3. "The infrastructure required to develop the economic prospects of the 1002 area is described in Chapter IV."

On page 75 of the Draft 1002 Report is is stated that "the exploration, development, and construction scenarios presented herein are general concepts and must not be considered to be final engineering solutions....", thus the word infrastructure on Pg. 101, para 3 should be modified by "proposed" or "hypothetical", such as "the hypothetical infrastructure required to develop...."

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Pg. 101, para 3. "Construction of as many as four or five year-round five-foot thick gravel C-130 airstrips on the 1002 area".

The hypothetical development in Figure V-1, pg. 90 shows only two airstrips. The current airstrips in use for the five existing North Slope fields, a size similar to the proposed 1002 development, number three. Thus "four or five" appears to be an overstatement.

Pg. 101 #6. Same comment as for Pg. 100, para 8.

Pg 101, para 17. "Construction of a solid-core causeway....would require breaching to permit fish passage...."

The breaching of gravel causeways for fish passage is not a necessary requirement. Although fish do pass through large breaches (Endicott Environmental Studies 1985) they also go around causeways with and without large breaches (Endicott Studies 1985; Prudhoe Bay Waterflood Studies 1981, 1982, 1983 and 1984). The Waterflood studies demonstrated that the West Dock Causeway was not an impediment to the migration of large fish. The 1985 Endicott and Colville River Fish Studies showed that even the smallest migratory anadramous fish, young-of-the-year Arctic cisco, were able to get by both the West Dock and Endicott causeways to reach the Colville River.

Pg. 103, para. 4. "Also thermokarst, which commonly occurs on the edges of roads and pads..."

References are required for this conclusion.

Pg. 103, para. 4. Impoundment concerns can be mitigated by adding culverts periodically after construction, as found to be necessary.

Pg. 103, para 5. Reference to Meehan 1986 and calculation of 7000 acres of secondary effects.

We find it inappropirate to reference a preliminary draft report that has been widely criticized for its lack of technical credibility It would be more appropriate to reference Walker et al., 1984, Meehan's main source. Secondary effects based on measurements actually taken at Prudhoe Bay could be derived.

Walker et al. (1985), calculated the areal extent of secondary effects in a 20 km^2 area of the most heavily developed region of Prudhoe Bay. The authors themselves refer to their analysis as a worst case scenario for the oilfield and their analysis "must not be used to make interpretations for the field as a whole". The main data for this area, referred to as Map 22, is contained in Table 12.

Walker et al. measured 222.93 hectares of gravel pads and roads in this area as of 1983. Vehicle tracks, gravel and debris, and heavy dust or dust killed tundra comprised 48.78 hectares, or a factor of 0.22 for every unit area of road or pad. Thermokarst totaled 59.29 hectares, or a factor of 0.27. (Flooding data is ignored because the Prudhoe area is dominantly wet, flat lowlands and not comparable to the ANWR region. It is fairly safe to assume that dust and gravel spray are more independent of terrain and habitat type). Combining both thermokarst and gravel spray, dust and vehicle tracks yields a total secondary effect (excluding impoundments) of approximately 0.5 for every unit of gravel. For a development scenario of 5000 acres, then, actual data has measured that secondary impacts are on the order of 2500 acres. This is also noted to be a worst case scenario. In light of this data, the proposed 7000 acre estimate for secondary impacts is an overexaggeration and not defensible.

Choosing a 100' corridor for secondary effects led to an overestimate due to the fact that dust and gravel spray may reach the distance specified by the references locally. These effects are not continually present along roads out to 100'.

Pg. 103, para 7. "Since 1972 some 23,000, mostly small, spills have been reported to the Alaska Department of Environmental Conservation. The largest spill of 658,000 gallons was the result of sabotage in 1978. A spill of over 200,000 gallons near Atigun Pass in 1979...."

It should be pointed out that neither of these incidents occurred on the North Slope, although they are an indirect outgrowth of North Slope development.

Pg. 104, para 1. "To date, the cumulative effect of spills has not been significant".

We would concur with this assessment. However, the main reason for the lack of significant impact is completely absent from the discussion. Of the 82,216 gallons spilled in 1985, very little actually remained in the environment because it was properly cleaned up. The discussion leaves the reader to conclude that all 82,216 gallons went into the tundra or wetlands. Spill prevention and cleanup is

aggressively pursued on the North Slope and to date has been effective. Most spills occur on gravel production pads while snow is on the ground and are therefore easy to spot and cleanup. Those that do escape detection or occur in the summer off gravel pads are treated with sorbent pads and rehabilitation and revegetation procedures.

To gain the perspective of what percent of the 82,216 gallons reported in 1985 escaped cleanup and proper disposal, oil spill records for the Prudhoe Bay (Eastern half) and Lisburne oil fields were reviewed. In 1985 ARCO experienced 29 oil spills that were reported to ADEC for the two oilfields. These 29 spills represent approximately 18,000 gallons of crude, diesel and other fluids. Twenty five of the 29 were spilled on gravel production pads, largely in the winter, and were cleaned up nearly 100% by removing the contaminated gravel or gravel, snow and ice mixture. The 4 spills off of gravel pads represent approximately 1150 gallons of crude, diesel and natural gas liquids. Cleanup activities were not able to recover all the spilled liquids and it is estimated that 300 - 400 gallons were not recovered. This represents approximately 2% of the total volume of oil spills that escaped into the environment.

Pg. 104, para 4-6, Mitigation Section.

The preceding discussion of impacts to vegetation, wetlands, and terrain types covers in detail the possible impacts from:

1) seismic surveys
2) ice pads and roads
3) gravel pads and roads
4) reserve pits
5) oil and fuel spills
6) gravel mining
7) secondary effects of roads, such as dust, thermokarst, gravel spray and impoundments
8) seawater spills

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The following Mitigation Section for these impacts discusses only a portion of these impacts and does so in the briefest possible manner. It is not for lack of subject matter or data, however, since 18 years of Arctic experience and millions of dollars have been spent on effective mitigation techniques. The following commonly employed mitigation techniques should be discussed to properly balance the discussion:

1) Snow depth, routing and USF&W oversight procedures followed during seismic surveys

2) Current accepted design parameters for ice pads and roads, (i.e. Brontosaurus well, NPRA, ARCO) that requires sufficient thickness, siting considerations.

3) Site selection criteria for roads and pads that avoid critical habitats.

4) The trend towards smaller gravel pads and reserve pits, decreasing the wellsite "footprint".

5) Aggressive fluid management of reserve pits to prevent overtopping and leaking.

6) Chemical screening of all reserve pit fluids prior to surface disposal to insure water quality standards are met.

7) Comprehensive oil spill contingency planning.

8) Spill clean up procedures, including proper disposal of snow/oil winter in and sorbent pads in summer.

9) Rehabilitation and revegetation of disturbed sites, including gravel spray removal, reseeding, replacing damaged vegetation mat.

10) Road watering to minimize dust generation.

11) Improved culvert design and placement to avoid impoundments.

The point is the mitigation section is inadequate. Only five sentences attempt to cover the large body of commonly used mitigative technology that applies to the preceding 16 paragraphs. Further, numerous sentences have nothing to do with mitigation and should be placed in the preceding consequences section: "An overall loss of approximately 5,650 acres (0.4 percent of the 1002 area) of existing vegetation could result, based on the estimated facility needs for developing the entire 1002 area. Habitat values would be lost when these habitats are covered by pads, airstrips, roads, and other support facilities. Additionally, at least 7000 acres could be modified by the secondary effects of gravel spray and dust deposition, altered snowmelt, and erosion patterns, thermokarst, impoundments, and pollution incidents. Habitat values would decrease."

Pg. 104, para 7. "The expected modification of approximately 12,650 acres (0.8 percent of the 1002 area) would be a moderate effect (Table VI-1) on area vegetation and wetlands."

The estimate of 5,650 acres for direct impacts of gravel appears to be reasonable based on the proposed scenario. Further, the classification of moderate impact for this area is appropriate. However, classifying 7000 acres of secondary impacts as moderate is either a) to large an area to be placed in the moderate category, as defined, or b) too severe a category for that broad an area.

The moderate category requires either a "local modification of considerable severity" or a "widespread modification of lesser severity". Since 12,650 acres is 0.8 percent of the Coastal Plain, it does not fit the category of "widespread". Therefore the 7000 acres of secondary effects are defined as local modification having "considerable severity". It is difficult to defend the hypothesis that 7000 acres of road dust, gravel spray and thermokarst would reach this degree of impact. Based on Walker et al. 1984, and the analysis contained in the comment for Pg. 103, para 5, we would recommend that this figure be changed to 2500 acres for secondary impacts, or 8150 acres total.

Pg. 106, para. 2. "Later studies (Cameron and Whitten, 1979, 1980; Cameron and others, 1981; Whitten and Cameron, 1985) indicate an absence of calving near

the Coast at Prudhoe Bay during 1976-85, possibly due to avoidance of the activity area by calving caribou".

This is a widely quoted, though erroneous, conclusion of the low numbers of cows with calves found in the Prudhoe Bay area. ADF&G reports for the period 1978-85 report average caribou densities of 0.06 caribou/km^2 while Gavin (1979) reports densities of 0.01-0.05/km^2 for the period 1970-79, or predevelopment. Thus the conclusion is that total caribou densities have always been low. In regards to calving, inspection of Table 1 shows the same consistent low historical numbers with little change through development.

At a recent caribou workshop at Alyeska (Demography and Behavior of the Central Arctic and Porcupine Caribou Herds in Relation to Oil Field Development, Oct 1986) all ADF&G and USFW participants reached the consensus that "the Central Arctic Herd (CAH) has never calved in the Prudhoe Bay area in large numbers."

TABLE 1 - TOTAL NUMBERS OF COWS AND CALVES WITHIN THE PRUDHOE BAY AREA (1165 km^2), 1970-1979.

From Gavin, 1980.

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Year	Cows	Calves	Calves per 100 Cows	Yearlings	Bulls	Total	Density Caribou/km^2
1970	24	17	71	8		49	0.04
1971	16	7	44	7		30	0.03
1972	8	5	63	4		17	0.01
1973	24	9	38	9		42	0.04
1974	34	9	27	8		51	0.04
1975	27	13	48	4		44	0.04
1976	19	4	21	5		28	0.03
1977	14	11	79	3		28	0.03
1978	29	15	50	7	6	57	0.05
1979	13	7	50	8	4	32	0.03

Pg. 107, para 2. "These changes in vegetation, and thus food availability, could occur on approximately 7000 (2500) acres, of which nearly 1800 (650) acres is in Resource Category 1 (1 (0.3) percent). Total modification of caribou habitat attributable to direct and secondary changes would occur on about 12,650 (8150) acres, or 0.8 (0.5) percent of the 1002 area, and 1.3 (0.8) percent of the core calving area (Resource Category 1 habitat)".

Based on the earlier discussion that 2500 acres of secondary impacts is a "worst case" based on actual data, then the above underlined changes should be made.

Pg. 107, para 5. "Whitten and Cameron (1985) found consistently low numbers of caribou and generally low percentages of calves in the Prudhoe Bay oilfield from their annual surveys of the CAH calving grounds, 1978-82, with caribou being displaced to adjacent areas already used for calving."

Based on Gavin (1980) which demonstrated consistently low numbers of caribou and low percentages of calves throughout the period 1970-1979, the conclusion is reached that numbers have always been low in the Prudhoe Bay Region. This was the conclusion of the Alyeska Caribou Workshop in October 1986 (see comments for Pg. 106, para 2). White et al. (1975) suggests that the high percentage of wet and moist areas near Prudhoe Bay makes this area less attractive to caribou.

Pg. 107, para. 5. "Dau and Cameron (1985), in what may be the most systematic study of caribou displacement by oil development, reported that maternal caribou groups showed measurable declines in habitat use within approximately two miles on either side of the Milne Point Road in the Central Alaskan Arctic."

The "two mile" reference is a typographical error. The actual distance is "two km".

Pg. 108, para. 2. "Displacement of the Porcupine Caribou Herd (PCH) from a core calving area to a less desirable area would be expected to reduce caribou productivity."

This statement is true, as it stands. However, in the ensuing discussion it is implied that any displacement of the PCH would necessarily be into a less desirable area. As the report points out, there is over two million acres of known concentrated calving area, not counting peripheral areas. Since the PCH has calved throughout this area successfully in the past, and there is no known effect of decreased productivity in the years that the herd used those areas exclusively, there is no reason to conclude that the areas outside the core calving area area less desirable. Therefore, the expectation that the herd's productivity will suffer is not supportable.

Pg. 108, para 2. "Although the CAH and PCH calving grounds are roughly equal in size..."

The <u>total</u> survey area covered by Whitten and Cameron (1985) of the CAH calving grounds is approximately 1.4 million acres. This figure is equal or higher than the CAH calving area by whatever definition. The <u>concentrated</u> calving area for the PCH is given as 2.1 million acres, and if peripheral areas are considered this figure would probably increase to three million acres or more. Thus, at a maximum, the CAH calving ground is 2/3 of the PCH, and probably closer to 1/2. (See Figure 1).

Pg. 108, para. 2. "Based on 1982 population estimates."

More recent population estimates, since they are available, should be used.

Pg. 108, para. 3. "As described by Whitten and Cameron (1985), absolute density for the PCH is nearly 14 times, and for the Western Arctic Herd (WAH) nearly 15 times greater than for the CAH. The difference in effective densities is even greater, particularly for the PCH, which are found at approximately 24 caribou per square kilometer as compared with approximately 5 caribou per square kilometer for the CAH. Effective density of the Western Arctic Herd is 15 caribou per square kilometer."

The difference in effective densities is not greater, it is less than absolute densities. For the PCH, absolute density is 14 times the CAH, while effective density is 24 caribou/km^2 vs. 5 caribou/km^2 or 5 times. For the Western Arctic Herd, absolute density is 15 times the CAH, while effective density is 15 caribou/km^2 vs. 5 caribou/km^2 or 3 times. Thus the difference in effective density is less than absolute density.

Pg. 108, para. 5. "The lack of observable adverse effects from displacement exhibited by the CAH would be unlikely for the PCH. The PCH is much more crowded in its calving habitats, and a substantially greater proportion of important calving habitats would be involved with development that included their core calving area."

The fact that the PCH has higher calving densities than the CAH is not sufficient to argue that displacement would be likely to cause adverse effects. Two other conditions would have to be met: 1) alternative high quality calving habitat is not available in sufficient quantities. The large area used by the PCH for calving, and their historical use and success in that habitat, would indicate that this is not the case. 2) The densities achieved by the PCH during calving are near some threshold limit above which range destruction or negative intraspecific interactions would occur. This has not been demonstrated.

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Pg. 108, para. 7. "Based upon the work of Dau and Cameron (1985), caribou are displaced approximately two miles out from development."

Dau and Cameron (1985) show a partial displacement out to two kilometers, not two miles.

Pg. 108, para. 7. "Within this approximately two mile area of influence are about 357,000 acres (38 percent) of the total concentrated calving grounds in the 1002 area."

Given that Dau and Cameron (1985) shows a partial displacement out to 2km, or 1.2 miles, then the effected area would be reduced to 60%, or 214,200 acres (23 percent) of the total concentrated calving grounds.

Pg. 108, para. 8. "An approximately two mile displacement of caribou out from petroleum facilities would include loss of 32 percent of the most critical PCH core calving areas (Table VI-5)." "The projected displacement from preferred calving habitat would represent a complete loss of habitat values."

Given that Dau and Cameron (1985) show a partial displacement out to 2km, or 1.2 miles, then the 32 percent should be reduced to 19 percent.

The assumption that all caribou (100%) would be displaced up to 2km (or 2 miles) is totally unsupported by Dau and Cameron's data. Total caribou decrease from an average of 1 caribou/km^2 predevelopment to 0.4 caribou/km^2 post-development up to 1km from the road, a decrease of approximately 60%. From 1 to 2 km the decrease is 1.7 caribou/km^2 to 1.0 caribou/km^2, or a 40% decrease. Beyond 2km caribou were more numerous after development than before (presumedly the displaced caribou plus increased caribou due to a steadily increasing growth rate). For calves there was nearly a 90% decrease for the first km and approximately a 50% decrease from 1 to 2km. Beyond 2 km calves increased above pre-development densities.

This would indicate a weighted average of an approximate 70% decline in calves, or maternal cows, up to 2km with the displaced cows and calves moving to an area beyond 2km from roads. This is equivalent to a 100% displacement up to 0.7 X 2km = 1.4 km or .9 mi for the purposes of calculating affected habitat.

Thus a one mile displacement is consistent with Dau and Cameron (1985) and should be used rather than the current two mile limit. This would, or course, decrease all estimates of the affected area by 50%.

Pg. 108-109. In general, clarification is needed with regard to references by S. Murphy and/or J. Curatolo on ramp and crossing studies. As this information is presented, it is incorrect, misleading and confusing.

Pg. 109, para. 6. "If caribou refuse to cross through any development areas, then 294,000 acres would be unavailable as habitat. That area encompasses 52 percent of total insect-relief habitat and over 80 percent of Coastal insect-relief habitats. This would mean that all coastal insect-relief habitats within the 1002 area, except for a small area in the eastern portion, would become unavailable under full development."

The hypothesis that the PCH would be eliminated from virtually all it's coastal insect-relief is predicated by the supposition that the PCH would "refuse to cross through any development areas". There are no studies in the literature to support the hypothesis that a properly designed pipeline and road would present a total physical barrier to caribou movements. Yet there are abundant examples of herds throughout the world regularly crossing roads, roads with pipelines, hunter's firing lines, and even improperly designed pipelines such as the Norilsk gasline in Russia (Shideler, 1986). The supposition is unsupportable.

Pg. 109, para. 6. "The second factor is to assume the approximately 2-mile sphere of influence for oil development used previously. Under that assumption, caribou crossing through the development area would avoid using approximately 72,000 acres or 29 percent of identified coastal insect-relief habitat within the 1002 area...."

The 2-mile sphere of influence is based on the Dau and Cameron (1985) study that was conducted during the calving season, not mosquito harrasment season. Conclusions regarding movement of mosquito harrased groups seeking coastal areas cannot be drawn from studies of the distribution of caribou during calving. Dau and Cameron (1986) found that "during June, the relative number of caribou within 1km of the (Milne Point) road was positively corelated with distance from

the road; there was no relationship between number of caribou and distance from the road for either May or July/Aug." It is well recognized that measurable behaviors that can occur during calving, such as avoidance, are often absent at other times of the year, such as during insect harassment.

Pg. 110, para. 2. "Effects of disturbance might also include....energy stress, possible critical during times of low energy reserves such as winter...."

The vast majority of the PCH would not be in contact with the development scenario during the winter.

Pg. 111, para. 3. "Mitigation of the loss of caribou habitat in Resource Category 1 (242,000 acres of core calving area) is not possible."

This statement requires explanation.

Pg. 112, para 3 & 4. Based on the preceding comments, this entire summary of effects on the Porcupine Caribou Herd should be modified. Although a conclusion of moderate impact may still be possible, the affected areas, particularly the 80% of coastal insect-relief habitat, should be modified.

Pg. 112, para. 5. "For the CAH, a moderate change in distribution or decline in that portion of the CAH using the 1002 area could occur. The effect on the entire CAH population throughout its range may also be moderate. Those effects on the segment of the CAH within the 1002 area would be similar to those on the PCH that occur from disturbance, displacement and barriers to free movement. The population decline or distribution change would be 5-10 percent for the CAH throughout its range."

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The basis for concluding that a moderate change in the CAH distribution or numbers has not been presented. In fact, all the data presented would lead one to the opposite conclusion. There is abundant discussion in the report regarding why the CAH is different and can be expected to respond differently to development than the PCH. The facts of lower overall densities, lower calving densities, more distributed rather than concentrated calving, incomplete range utilization, greater habituation and the overwhelming fact that the CAH has already demonstrated it's accommodation to development are all discussed in the report. All of these argue towards a minimal impact of the proposed scenario on the CAH. Further, the proposed development scenario borders the extreme eastern extension of the CAH's calving areas, while it overlaps substantially with the PCH. Given all these differences discussed in detail in the report, it appears to be inconsistent with the conclusion that the "effects....would be similar." The qualification of "on the segment of the CAH within the 1002 area" is specious because there is no distinct subpopulation of the CAH that uses the 1002 area. That a "population decline or distribution change would be 5-10 percent" is not supportable. Based on Table VI-1, the environmental effect on the CAH should be negligible.

Pg. 113, para. 3. "Displacement from calving areas would have a negative effect on muskoxen production."

Displacement from calving areas may have a negative effect on muskoxen production if they are near or at their upper limit of utilizing all high quality

calving habitat throughout their range. The high productivity reported for the ANWR muskox population has been attributed to the availability of preferred forage during summer (Robus 1981) and to the tendency for herds to remain in relatively restricted home ranges, thereby capitalizing on the abundant forage (Jingfors 1980). As the 1002 report points out, "carrying capacity has apparently not been reached." Thus due to the fact that the herd is still expanding its range, and that high productivity rates have been tied to abundant forage, it does not follow that displacement would have a negative effect on productivity.

Pg. 113, para. 4. "From the reports of Russel (1977) and Reynolds and La Plant (1985), a 2 mile sphere of influence was assumed in calculating the range which could be affected by full leasing."

The term "affected" is defined in the next sentence as "lost or greatly reduced." Thus the 2-mile area is being defined as an area where muskoxen are removed by 100% (lost) or decreased by an amount in the range of 60-90% (greatly reduced). The data of Reynolds and LaPlant (1985) show that a flight response occured in only 7 of 31 groups (23%) encountered in the Tamayariak area (Table 1) or the Okerokovik area (Table 3). This flight response occurred at distances from 200 m to 3.2 km, or an average of 1.5 km. Based on these data, one would have to significantly increase the stimulus, or shorten the 2-mile sphere of influence, or both, to reasonably expect a 60 to 100% displacement in muskoxen. Four of the 9 groups (44%) displayed no response at distances less than a km. It is not sound scientific judgment to pick the farthest distance reported for a flight reaction (3.2 km) and then conclude that most or all of the animals will behave in a similar manner, when the Reynolds and LaPlant data show that only 23% actually did. This is particularly true since habituation is known to occur in muskoxen, as the report states.

Thus the assumption that a 2-mile sphere of influence is appropriate for a complete displacement of muskoxen is not supportable by the data.

Pg. 113, para. 3. "The magnitude of that effect is difficult to accurately predict, particularly in view of the expanding nature of the population and refuge management objectives to allow continued population expansion."

Management objectives are irrelevant to the topic of discussion. Whether management objectives are to increase or decrease the herd has no bearing on whether displacement will have a large or small effect on muskox production.

Pg. 113, para. 4. "Table VI-6 shows that habitat values could be lost or greatly reduced throughout about one-third (256,000 acres) of the muskox range within the 1002 area."

These figures should be decreased by at least half based on the previous discussion.

Pg. 114, para. 1. "Major negative effects upon the muskoxen population from oil development could occur, considering the present management objectives for continued population growth of the herd under natural regulation and the displacement from habitat likely to occur."

It is inappropriate to attempt measure impacts against an open ended management policy when there is no discussion of the carrying capacity of the habitat and where limiting factors to growth may occur. This discussion confuses whether impacts are being measured against today's current population (implicit in the definitions in Table VI-1) or against some future potential. If the future potential is being used as a yardstick, then one must discuss some limits to future population. Clearly this management goal will have to be altered in the future as the herd reaches it's maximum utilization of whatever habitat is most critical.

If the negative effects are being measured against future potential, it should be clearly stated and the proper discussion of habitat limitations should be included. If the negative effects are being measured against today's current population, then references to the management objectives should be deleted as they confuse the issue.

P. 114, para. 2. "However, considering the larger extent (158,000 acres, 43 percent) of all high-use muskoxen habitat within the 1002 area, as well as more than 33 percent of the population's high use habitats throughout the Arctic Refuge which could be affected under full leasing, a change in distribution or decline affecting 25-50 percent of the population may occur."

1) Given that the 2-mile sphere of influence figure used to derive the affected area is based on a maximum distance to illicit a behavioral response which may have no demographic consequences (and did not in Reynolds and LaPlant's study) and 2) there is no data to indicate that the muskox are even approaching full utilization of their habitat, and 3) the herds are expanding their range driven by a high productivity, it is difficult to support a conclusion that a decline of up to 50 percent may occur.

Pg. 114, para. 9. "Effects on the regional moose population from habitat loss and mortality due to oil development in the 1002 area would be minor."

Due to the very low population of moose on the Coastal Plain, the extremely low loss of habitat expected, the ability of moose to habituate to disturbance and the ability of ADF&G to regulate moose harvest, it is reasonable to expect a negligible, rather than a minor, effect.

Pg. 115, para. 6. "A moderate decline of the wolf population using the 1002 and surrounding area could result from the cumulative effects of direct mortality and reduced production or survival of young, caused by reduced prey availability."

As pointed out in the state references, there is indeed a relationship between the abundance of wolves and the biomass of ungulate prey. However, even if one hypothesizes a 40% decline in the PCH from 180,000 to 100,000 animals, it is difficult to demonstrate that 5 to 10 wolves would be in any way limited by a herd of such magnitude. The cited references all deal with wolf/caribou densities that are orders of magnitude higher than 0.00002 to 0.0001. Further, no consideration is given to alternate prey species.

The environmental effect on wolves from the proposed development should be changed to negligible.

Pg. 120, para. 1 - Swans, Geese, and Ducks. One study that should be referenced in the Murphy, et al. (1986) "Lisburne Terrestrial Monitoring Program - 1985. The effects of the Lisburne Development project on Geese and Swans." The results of this study indicated that there was little effect on the nesting and area use of geese, swans and ducks in the Lisburne development area.

Pg. 120, para. 11. All references to the West and Snyder-Conn Report should be deleted for the reasons provided earlier in the comments on Pg. 100, para 1 and 2.

Pg. 121, para. 7. "Table VI-7 shows the amount of habitat that could be affected by development resulting from full leasing, assuming snow geese are displaced 1.5 and 3 miles as observed by Gollop and Davis (1974)."

The reactions of fall-staging snow geese to noise were studied by Gollop and Davis (1974) and Wisely (1974). In those studies, gas compressor noise simulators were placed in fall-staging areas and the reactions of flying and feeding flocks were observed with and without noise production. Some general conclusions, which cannot be evaluated quantitatively, include:

1) noise may decrease the number of flocks that land at a particular site;
2) noise may cause a temporary alteration in the flight path of goose flocks;
3) geese may avoid feeding sites where high noise levels are present;
4) feeding flocks may react to the sudden occurrence of gas-compressor type noise up to 3 mi away (Gollop and Davis 1974); and
5) feeding flocks may approach to within 300 m of continuously-operating gas-compressor noise simulators, but most flocks appear to avoid the area within 800 m in front of such noise simulators (Wisely 1974).

Gollop and Davis (1974) did observe some snow geese disturbance up to 3 miles, but, as with other studies cited in the 1002 report, this should not be given as an adequate indication that geese would be totally displaced out to 3 miles. In fact, Gollop and Gavis report in their Table 8 that the mean distance that snow geese flared under simulator tests was 365 yds, or 0.2 miles. Thus the 1.5 and 3 mile limits suggested by the report are gross overestimates and are not supported by the cited literature.

Pg. 121, para. 8. "Reduced time spent feeding and lost habitat in which to feed would result from petroleum development, adversely affecting accumulation of the energy reserves essential for migration. Davis and Wisely (1974) estimated that staging juvenile snow geese unable to adjust to aircraft disturbance accumulated 20.4 percent less energy reserves due to lost feeding time."

Davis and Wisely's discussion of the energetic effects of disturbance is questionable because the authors assumed that disturbance reaction time would subtract in equal proportions from all other activities. A more conservative approach would be to assume that the geese were capable of at least some compensatory increase in feeding rate. The estimates of 20.4% reduction and 9.5% reduction in energy reserves acquired by juvenile geese subjected to 2-h interval fixed-wing and helicopter overflights, respectively, are probably overestimates of the bioenergetic impact of these disturbances.

Pg. 121, last para. A decline in waterfowl populations has not been documented in the Lisburne operational area. This fact is counter to the supposition made that a decline in waterfowl could occur as a result of development.

Pg. 122, para. 2. "The average number of snow geese annually staging on the 1002 area could be reduced by almost 50 percent."

The affected habitat has been grossly overstated based on a misapplication of Gollop and Davis's results and the assumption that geese could not compensate for lost feeding time or habituate to disturbance. This has led to an equally gross overstatement of the potential effects on snow geese.

Pg. 123, para. 4. "Recent work near Prudhoe Bay has shown that reduced numbers of shore-birds occur near roads in the oil field (Troy and other, 1983; Troy, 1984)."

Troy's work also shows increased habitat use near roads for several species, including Northern Pintails, Red-Necked and Red Phalaropes in impoundments, and Semi-palmated Sandpipers in dust induced early melt zones.

Pg. 123, para. 11. "The major effects anticipated on the PCH from development could cause an effect on golden eagles because of decreased prey abundance or modified distribution."

There is no reason, a priori, to assume that a 20 - 40% reduction in the PCH would necessitate a moderate impact on golden eagles, given the high numbers and densities of the PCH.

Pg. 131, para. 6. "Moreover, the existence of oil facilities and activities would eliminate the opportunity for further scientific study of an undisturbed ecosystem."

While the opportunity for study of an undisturbed system might be eliminated, the reality is that millions of dollars worth of actual studies are guaranteed to take place if the coastal plain is developed. The amount learned will far outweigh the studies that might be carried out with little economic incentive.

Pg. 143, Table VI-8. The chart indicates under "Artifacts at Development Sites" that all would be lost in the full and partial leasing alternatives. When, in fact, under current law prior to surface use, an archaeological survey must be performed over the area that may be impacted. Important archaeological sites are avoided, studied or removed to prevent damage to this resource.

Pg. 145 - 148. Summary of recommended mitigation for the 1002 area. We recognize the need for meaningful mitigation measures, many of those listed are presently in force in the North Slope oil fields; however, during the last ten years we have found that some of the mitigation measures that were put in place at the onset were unnecessary. We recommend a more general/flexible case-by-case option to mitigate the concerns of the present, using the past history as guidelines for mitigation.

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DO YOU WANT TO MAKE PUBLIC COMMENTS?

If you would like to speak at the hearing today, please fill in the blanks below and turn it in to one of the Fish and Wildlife Staff members present. You need not complete this sheet to submit written comments. Thank you.

Please print
Name: Debbie Miller

Mailing Address: T[illegible] Village

Check appropriate box below:

☐ I am here to offer my own views.

—or—

☐ I am speaking for ______________________
(please enter name of organization you represent)

TESTIMONY REGARDING

ARCTIC NATIONAL WILDLIFE REFUGE, ALASKA

COASTAL PLAIN RESOURCE ASSESSMENT

BY

DEBBIE S. MILLER
1446 Hans Way
Fairbanks, Alaska 99707

January 5, 1987

My name is Debbie Miller and I reside at 1446 Hans Way in Fairbanks, Alaska. I find it extremely inconvenient traveling to Anchorage with a six month old in order to testify at a public hearing. Numerous individuals and organizations, including Governor Cowper, requested that public hearings be held in Fairbanks and Arctic Village. Our requests have obviously fallen on deaf ears.

I am attending this hearing because I believe that the issue of opening the Arctic Refuge coastal plain to oil and gas development is the most important conservation issue in my lifetime. I cannot, in good conscience, sit at my desk and merely write a letter to the Secretary, criticizing his recommendation which would open the coastal plain to full scale oil and gas leasing. I must publicly denounce the Secretary's illogical recommendation which is not supported by the contents of the coastal plain resource assessment. I question whether the Secretary read the assessment prior to writing his recommendation.

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Although I am testifying as an individual I represent many voices which will not be heard today. I speak on behalf of my daughter whose generation would like to see some of our Arctic landscape preserved as wilderness for their time. I speak for the elder in Arctic Village who detests the idea of opening the calving grounds of the Porcupine Caribou Herd to oil and gas development, but will not be given the opportunity to be heard in their own village. I remind you that Arctic Village residents speak English as a second language and few elders are capable of submitting written comments. My voice is also the voice of those whose efforts and dedication helped establish the Arctic National Wildlife Range for its unique wilderness, wildlife, and recreational values: individuals like Olaus Murie, Clarence Rhode, George Collins, and Lowell Sumner. Let's hope that their work was not in vain.

For the past 11 years I have been fortunate to spend a substantial amount of time living, working, and recreating within the Arctic National Wildlife Refuge. I taught school and was a resident in Arctic Village for three years. I have taken numerous backpacking, kayaking, and climbing trips on the refuge. I've been lucky enough to witness the aggregation of the 180,000 Porcupine caribou herd. In 1982 I assisted former refuge manager Ave Thayer on a wilderness assessment study of the coastal plain. In 1983 I assisted the Alaska Department of Fish and Game with an aerial census of the Porcupine caribou herd. Currently I am member of the consultation planning committee for developing the Arctic Refuge comprehensive management plan.

The most tragic dimension of the resource asssessment is the Secretary's recommendation. I am extremely disappointed that the Secretary has apparently overlooked the significant wilderness, wildlife, and recreational values of the coastal plain, as well as economic and geologic data contained in the report.

The Secretary misleads the public in the opening paragraph of his recommendation where he states that the "coastal plain has been predicted to contain as much as 29 billion barrels of oil

and 64 trillion cubic feet of gas, making it the most outstanding oil and gas frontier area in North America..." The Secretary further states that the mean recoverable value of 3.2 billion barrels could account for almost 4 percent of the daily U.S. oil demand in the year 2005. However, the Secretary fails to note that the mean recoverable value is based on the assumption that there is only a 19% chance of finding a major oil reserve within the 1002 area.

Even if there is 3.2 billion barrels of oil beneath the coastal plain it is hardly worth extracting such quanities for the equivalent of six months supply of oil for the nation. This is a drop in the bucket given our long term energy needs. By comparison, a 3.2 billion barrel field is merely one third the size of recoverable oil reserves at Prudhoe Bay. On the world scale such a field would offer little competition to the giant oil fields in the Middle East. Saudia Arabia and Kuwait boast of fields containing more than 60 billion barrels of oil. Let's face it, on the world scale, oil production in the U.S. rivals wheat production in the Soviet Union. Why not stockpile cheap foreign oil as a strategic defense policy for the United States?

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It makes absoultely no sense to destroy the only virgin Arctic coastal plain on the North Slope for a few million or billion barrels of oil. Such action is completely contrary to the purpose for establishment of the refuge. In the late 1940's several individuals recognized the northeastern corner of Alaska as offering a unique diversity of Arctic and sub-Arctic species along with a wilderness quality that is unsurpassed. These wildlife and wilderness values still hold true today.

Furthermore, the Reagan administration has flooded the oil and gas leasing market. Over the years lease sales have been cancelled due to lack of interest by the oil industry. The average bid per acre has dropped by more than half. The department's leasing program amounts to a give away lease plan for the oil industry. Why not hold on to these tracts until the price of oil increases?

The Secretary's recommendation points out that the nation might benefit from a more favorable balance of trade by saving $8.1 billion in the year 2005 on the cost of imported oil. This may sound like a huge savings but what does this figure really mean in relative terms. If our trade deficit was $19 billion for the month of December what will $8.1 billion annual savings represent in the next century? I recently heard one economist note that our trade deficit could soar to $500-600 billion dollars annually in the 1990's. Balance of trade arguments do not justify opening up our only undisturbed Arctic region in the United States.

The report fails to adequately assess the environmental consequences of oil and gas leasing on the coastal plain. The report is based on the underlying premise that that the oil industry has a proven good track record with respect to 10 years of oil development in the Prudhoe Bay area. That's a bit like stating that U.S. companies have a clean track record south of the U.S. Mexican border. I'm not implying that the oil industry has created a New River scenario on the North Slope, however the industry has not been monitored on any regular basis by the State

of Alaska until 1982. The state is just now implementing hazardous waste and drilling mud regulations. This coming fall the Department of Environmental Conservation will open an air quality monitoring station at Prudhoe Bay for the first time.

In reality, there have been tens of thousands of oil spills reported in the Prudhoe Bay oil fields, there have been serious problems with disposed drilling mud effecting aquatic life on adjacent tundra ponds, and there has been no legitimate plan for hazardous waste disposal in recent years.

The Department of Environmental Conservation reports that the oil industry disposed of approximately 40,000 gallons of bona fide hazardous waste material to a local salvage operator on the North Slope who had no experience dealing with hazardous waste. The State of Alaska forced the oil industry to enter into a binding contract to dispose of the hazardous waste properly. Otherwise, the industry would have been faced with a Superfund clean-up.

Potential air and water pollution problems associated with massive oil development were not adequately addressed in the 1002 report.

Several years ago I was fortunate enough to scale one of the highest glaciated peaks in the Brooks Range, Mt. Michelson. Mt. Michelson is located in the heart of the refuge between the Hulahula and Okpilak Rivers. From the top of this mountain I felt honored and so humbled to be a part of so vast a wilderness vista. To the south, west and east stretched an endless sea of snow covered ~~peaks~~ mountains. I was standing on one of the highest mountains of our most northerly mountain range in the United States.

I looked below me and watched one of our country's most northerly bands of Dall Sheep grazing along a velvet green ridge below the glaciers. And looking to the north was perhaps the most impressive view. For it was there that I could see the distant Beaufort Sea and the horizon of white ice stretching forever to the North Pole and beyond. And between the Beaufort Sea and the mountains lay the expansive, gently rolling coastal plain, sweeping towards the coastal lagoons. In one far reaching glance I was witnessing the most spectacular and remote wilderness setting in the United States. I realized at that moment in time that the Arctic refuge had given me, and our country, the ultimate gift of true wilderness.

The Department of Interior has failed to conduct an adequate wilderness review as mandated under 1004 and 1317 of ANILCA. How can the Secretary recommend oil and gas leasing of the coastal plain ~~and~~ while barely touching upon the wilderness values in the 1002 report? Furthermore, the Arctic Refuge consultation planning committee has been instructed to not consider addressing the 1002 area when developing the comprehensive management plan since it will be addressed by Congress. This is usually the forum where wilderness review mandates are met under Section 1317. If wilderness review is not included in the comprehensive management plan, and only touched upon in the 1002 report, it has simply fallen through the cracks.

I recommend that the Secretary conduct a complete wilderness

review of the 1002 area as mandated under Sections 1317 and 1004. The 1002 area is de facto wilderness and should be designated as wilderness to protect the area from man's industrial intrusion.

Finally I will say that I agree with pg. 46 of the report which states that:

"The 1002 area is the most biologically productive part of the Arctic Refuge for wildlife and is the center of wildlife activity on the refuge. Caribou migrating to and from the 1002 area and the post-calving caribou aggregation offer an unparalleled spectacle."

If we open the 1002 area to oil and gas leasing we will be cutting off the most vital arm of the refuge. It is true that the greatest concentrations and diversity of Arctic wildlife occur on the coastal plain of the refuge. A pipeline bi-secting the calving, foraging, and insect relief grounds of the Porcupine Caribou Herd, along with a road complex and drilling pads, will adversely alter the habitat and create major negative impacts on the herd. The wilderness character of the refuge would be destroyed. These losses cannot be compensated. There is only one Arctic refuge in the United States.

I encourage the Secretary to read the resource assessment and to revise his recommendation in favor of wilderness preservation. Thomas Fuller once said that "A blind man will not thank you for a looking glass." Take a closer look at the 1002 area Mr. Secretary, and I hope you are not blind.

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Mitchell Management
202 Deerfield Dr.
Anchorage, AK, 99515

January 5, 1987

Hand Delivered at
Public Hearing
Anchorage, AK
January 5, 1987

U.S. Fish & Wildlife Service
Attn: Division of Refuge Management
2343 Main Interior Bldg.
18 & C Sts. N.W.
Washington, D.C., 20240

Reference: Public Comment on Draft ANWR Coastal Plain Resource Assessment and Recommendation to Congress

Gentlemen:

Please consider the following during your preparation of the Final ANWR Report and Recommendation to Congress:

1. I support the Secretary's recommendation that the Arctic National Wildlife Refuge be made available for oil and gas leasing. I believe that exploration and production can be carried out without significant environmental degradation.

2. There are numerous intersectional inconsistencies within the report as it now stands, perhaps reflecting the various opinions and bias of individual writers. These should be edited out. An example can be found in the discussions of the effect of development on archaeological resources. Table VI-8, page 143, indicates that all artifacts at development sites will be lost. The unnumbered summary table on pages 148 and 149, however, indicates negligible effects on these resources, perhaps based on pre-construction investigations which would be required in accord with proposed Stipulation 29.

3. Key items of documentation are missing. One example is documentation of why five out of fourteen years of concentrated use defines a core calving area compared to perhaps seven out of fourteen years or two out of fourteen years. Review of the data shows natural breaks at three and seven years, not five.

There is also a lack of documentation for many of the wildlife use areas presented on Plates 1 through 3 which were used in the overlay method to assess direct habitat loss or alteration. One example of this deficiency is Plate 1 E where approximately 150 square miles of land at the mouths of the Staines and Canning Rivers has been designated "Confirmed coastal denning area" based on one observed den since 1951. Approximately 250 square miles at the mouth of Marsh and Carter Creeks are similarly designated based on two dens in the last 15 years. Considering such large areas when making loss of habitat estimates seems to be unrealistic when it is proposed to limit activity within only one half mile of a confirmed den (Proposed Stipulation 19). Lacking

proper documentation one might conclude that the wildlife use areas were artificially enlarged so as to increase the projected loss of habitat.

4. I believe that a major shortcoming of this draft report is the failure to provide a basis for equally comparing the projected conditions of the study area under each of the alternatives.

For example, Alternative E - Wilderness Designation, is not adequately addressed. The environmental consequences section consists of only some 400 words. Discussion is limited to a static situation responding only to the forces of nature. In order to make an informed decision among the alternatives, the condition in the study area under a wilderness designation must be projected into the future in the same way as should be used for the other alternatives. The effects of presumably full and undisturbed subsistence hunting pressure on the various wildlife populations must be addressed. As an example, one must address the likelihood of and effect of repeated subsistence takes of 25 polar bear per year as was the reported case in Kaktovik during the 1980-1981 harvest.

This section should address the changes that can be expected to occur in the cultural/socioeconomic environment over the foreseeable future. These would include a continuation of the trend towards a cash based society at Kaktovik, projected population trends and the effect of changes in population on the use of the area's subsistence resources, projected effects of changes in the efficiency by which the local residence will carry out subsistence activities and the like.

5. The statistical treatment in Chapter III is more confusing than it need be, as evidenced by the various claims and counterclaims about the areas potential and intentionally misleading the public. This goes deeper than a typographical error on pages 5 and 6 where "more than" was twice dropped from "...[more than] 0.6 billion barrels of recoverable ... [more than] 9.2 billion barrels ..."

The primary confusion arises out of the following sentence on pages 49-50 :

"It is estimated, if there is economically recoverable oil present (the chance of which is estimated to be about 20 percent), that there is a 95- percent chance of more than 0.6 BBO and a 5-percent chance of more than 9.2 BBO recoverable in the 1002 area as a whole."

Based on this sentence, it would seem like you could multiply the 20-percent "economically" by the 5-percent "more than 9.2 BBO

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recoverable" and arrive at a 1-percent "more than 9.2 BBO economically recoverable". If this is the case, just say so.

Alternately, Table III-4, page 72, indicates that the "economically" factor is already contained in the 95-percent, ie:

> 95-percent probability of greater than 0.59 BBO Conditional, economically recoverable oil.

Regardless of whether it is one or the other, or somewhere in between, the language needs improvement for the sake of clarity.

6. At times the report slips facilely back and forth between addressing the entire Refuge and the limited 1002 study area. One such example is the Recreation section on page 45 where in the course of three paragraphs we change from discussing one to the other some eight times. This tends to be confusing to the reader and should be minimized. It is noted in passing that this section falls within the "undocumented" category discussed in the preceding item number 3.

7. Use of emotionally charged language should be avoided like the plague. The Wilderness and Esthetics section of the Existing Environment Chapter is a particularly bad offender. The sentence on page 46 which reads, "Caribou migrating to and from the 1002 area and the post calving caribou aggregation offer an unparalleled spectacle" is an example of one such sentence which has been publicized nationwide by an Audubon Action Alert.

I believe that it could be successfully argued that the migration and aggregation of Monarch butterflies is of parallel spectacle as is that of whales in the Baja California area.

8. I concur with the above cited Audubon Action Alert in that I believe that the status and projected results of all negotiations regarding land trades effecting the 1002 area must be discussed in this report. The economic benefits or losses which may be realized by various governmental organizations and private citizens based on exploration and/or production of this area will be significantly effected by such trades. I fail to see how inclusion of this information can be avoided in as much as it has been reported that such trades may be conditional upon Congressional action based, in part, on the subject report.

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Thank you for your consideration of these review comments. In closing, I would like to very briefly address what I believe to be two misstatements of fact which have often been made in the press and other public forums.

Firstly, the 1002 area is not the last chance to preserve a section of the arctic coast as wilderness. In excess of some 400,000 acres east of the Aichilik River have already been designated as wilderness.

Secondly, it has been said that, given only a 20-percent chance of finding economically recoverable quantities of oil in the area, it is not worth the chance of environmental disruption caused by construction of roads, pipelines, processing facilities, docks, and similar facilities. Should the area be opened for leasing however, and no economically recoverable reserves are found, the environmental consequences will be limited to those associated with Alternate C - Further Exploration, which are all, with one exception, identified as minor or negligible in the Summary of Effects table on pages 148-149. Should no economically recoverable reserves be located, development will be limited, for the most part, to the low impact winter construction and drilling of wildcat wells.

Sincerely,

Dennis W. Mitchell

Dennis W. Mitchell

Nina Mollett
1900 Gilmore Trail
Fairbanks, Alaska 99712

January 9, 1987

U.S. Fish and Wildlife Service
Div. of Refuge Management Resources
2343 Main Interior Building
18th and C Streets, N.W.
Washington, D.C. 20240

To Whom it May Concern:

This letter is intended as testimony on the draft Department of Interior Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment: Report and recommendation to the Congress of the United States and legislative environmental impact statement. I have read this report and, as a fifteen-year resident with a long-term active interest in the issues involving the future of this state, I differ sharply with its recommendation to pursue leasing of the entire coastal plain.

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The recommendation to lease does not follow in any kind of logical way from the contents of the assessment itself: on the contrary, such a recommendation can only be made by ignoring the compelling evidence contained within the report, and reflects instead the predictable ideological biases of an administration that, while giving lip service to "balance", has consistently favored development of non-renewable resources over conservation of renewable resources, and short-term political interests over long-term public values. The fact that Alternative A, leasing of the entire plain, is recommended, rather than Alternative B, which would exclude the critical Porcupine Caribou Herd calving areas, only serves to confirm the impression that the conclusion of the report was predetermined by ideology and was made independently of the objective assessment contained within the same document. The conclusion is also in conflict with that of the 1973 executive study, which recommended wilderness designation for the entire wildlife range, with certain exceptions, and the 1982 Thayer review of the 1002 area, which also recommended wilderness designation, except for the abandoned DEW line stations.

I favor wilderness designation for the coastal plain. The reasons for such designation are contained eloquently within the report itself, which on pages 45-46 states, "The Arctic Refuge is the only

conservation system unit that protects, in an undisturbed condition, a complete spectrum of the various arctic ecosytems in North America...The coastal plain in its present state has outstanding wilderness values. scenic vistas, varied wildlife, excellent opportunities for solitude, recreational challenges, and scientific and historic values...The 1002 area is the most biologically productive part of the Arctic Refuge for wildlife and is the center of wildlife activity on the refuge."

The executive summary, page 1, states that in addition to specific adverse environmental consequences of developing the 1002 area, the presence of infrastructure supporting oil and gas development would "eliminate" the wilderness character of the area.

The details of the enormous environmental problems with developing this area, problems which include a critical lack of fresh water and the necessity for scarring up the land while digging out enough gravel to build on permafrost, will I am sure be dealt with in other comments. What I wish to emphasize instead is the irrationality of the conclusion. Buried deep within this report is the information that there is only a 19 percent chance of an economically viable reserve being found in the coastal refuge. In reaching their conclusions the authors of the report ought to, but don't, attempt to balance this chance against the indisputable fact of a wilderness area unique in the world; there is no other coastal plain preserving such ecological variety in America, nor in Siberia, nor in Scandinavia. And beyond the unexamined assumption that unrecoverable wilderness is worth trading for a chance of recoverable oil, the conclusion of this report relies on a further unstated assumption: that we are the last generation; that extracting oil which will serve us for a few decades—30-90 years, according to the report—is worth laying waste to wilderness forever. The coastal plain is stated to be "the most outstanding oil and gas frontier remaining in the United States." But what will happen to our import-export balance, our economy, our national security, when the oil, assuming that it is found to be worthwhile extracting, runs out? Our government ought to operate under the assumption that there will be a future, which must be taken into account; if indeed this possibility of oil has such value that it is worth destroying our wilderness heritage over, there ought to be a discussion of whether it might not be wiser to preserve the opportunity for our descendants, who will likely be hurting for oil more than we are now (the world is, after all, currently experiencing an oil glut) and who may have greater need for it, and more compelling national security requirements. What gives our generation, like pigs at the sty, the right to lap up all available resources?

I don't expect that my letter will have any impact on the outcome of the final report of an Interior Department which held public

hearings on this matter not through any interest in the democratic process but because it was forced to by a lawsuit. However, fortunately this decision is in the hands of Congress and not the executive branch: it would have been politically smarter, I should think, for the department to mask its ideological extremism by recommending the somewhat less radical alternative of leasing the area with the EXCEPTION of its most sensitive areas. But if we wish to behave responsibly as, so to speak, executors of this estate, the entire coastal plain ought to be designated wilderness. And this is a moderate suggestion, since the rest of the North Slope has already been thrown onto the development side of an unbalanced scale.

Although I see no chance of the conclusion of this report being changed no matter how much carefully reasoned testimony is received, I would like to make the following more peripheral suggestions for the final report:

1) Page 72 contains the information that there is a 19 percent chance of economically recoverable oil, based on the "most likely case" assumption of $33 per gallon. There is also a 26 percent probability figure given, under the "optimistic case" assumption of a $40 per barrel price. No basis is given for adopting these optimistic assumptions, and there is NO figure for what we might call the "pessimistic, realistic case" under which the price would remain around $15-$20 per barrel. Since it is the existence or or absence of economically recoverable oil that must be the basis for a decision, the 19 percent figure, along with a more realistic calculation based on current oil prices, ought to be located candidly in the executive summary after the sentence, "This resulted in an estimated 95-percent chance of 0.6 billion barrels of oil recoverable, a 5-percent chance of 9.2 billion barrels of oil recoverable, and an average conditional economically recoverable resource estimate of 3.2 billion barrels of oil," which is otherwise misleading to anyone lacking an advanced degree in obfuscation.

2) Please explain what is meant by Bill Horn's suggestion that unavoidable habitat losses suffered during leasing be "fully compensated"—or else drop the concept, which since it apparently has no real meaning is misleading, lulling. Highway builders can compensate private owners for loss of their property, but who is to be compensated for the loss of caribou calving grounds? The caribou? How will the Kaktovik Eskimoes be compensated for the loss of subsistence opportunities and degradation of their quality of life? With money?? How will our descendants be compensated for the loss of the opportunity for solitude? In how many trillions of dollars? (Please excuse the sarcasm, but I am at a loss how otherwise to respond to the problem of official jargon; answering in the same style of jargon would imply acceptance of the terms of a debate which is in fact based on irrational assumptions. The

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idea that compensation could be made—but to whom?—for loss of wilderness is of course an Interior Department fantasy, and the fact that it is couched in dry jargon makes it no less a fantasy.)

3) As mentioned earlier, the final report ought, in the sections delineating the potential benefits to be accrued from developing the oil reserves, to include a serious longer-term assessment. I believe that an objective examination of the current situation and the draft assessment would have concluded that leasing the 1002 area is not worth the price of wilderness destruction. But I can imagine a time of worldwide oil scarcity and energy needs so pressing that this conclusion would have to be reassessed. If the oil is in fact worth recovering economically, then the relative merits of extracting it immediately, or preserving it for a future time of perhaps greater need, should be carefully weighed. Such an assessment would be difficult; there are many factors which will not lend themselves easily to numerical manipulation; but to ignore the future entirely is to part with any claim to wisdom in your deliberations.

Sincerely yours,

Nina Mollett

cc: Senator Bennett Johnston
Governor Steve Cowper

Pamela S. Nelson
P.O. Box 1127
Kotzebue, Alaska 99752
January 6, 1987

U.S. Fish and Wildlife Service
Attn: Division of Refuge Management-- ANWR 1002 Report
2343 Main Interior Building
18th and C Streets N.W.
Washington, D.C. 20240

Dear Sir/Madam:

I would like to comment against oil and gas development on the coastal plain of the Arctic National Wildlife Refuge. The draft report to Congress and the numerous 1002 Baseline Study Update reports document the tremendous wildlife values of the area. Specifically, I recommend the Wilderness (E) or the No Action (D) alternatives. I was a volunteer wildlife biological technician on the 1002 studies in 1983 and have since spent considerable time living in the arctic and working with migratory birds, caribou, and rural subsistence users.

A cautious and conservative approach, rather than the reckless and short-sighted Full Leasing Alternative currently proposed in the draft report, should be taken in the management of the ANWR Coastal Plain because of the following reasons:

1. This area is the historic and recent center of calving activity for the Porcupine Caribou Herd (PCH). Based on data presented in the Report to Congress, the 1002 Update Reports, combined with my field experience on the ANWR Coastal Plain, it is difficult to understand how an extensive oilfield can be placed in the midst of a caribou calving ground without major significant adverse impacts to the herd. The development scenarios show the greatest concentration of well pads and feeder pipelines in Resource Blocks C and D, and part of Block B, precisely in the most frequently used "core" caribou calving area.

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When I was working in the "core" calving area on the Jago River near VABM-Bitty, even the mere presence of biologists on foot or small survey aircraft caused dispersal of caribou cow/calf groups. With the intensive ground activity of oilfield workers and equipment combined with frequent helicopter and cargo aircraft overflights, displacement of the cow/calf caribou groups will occur. The Report to Congress states that about a third of the concentrated calving area would be affected by the Full and Limited Leasing Alternatives (page 107). It is known that development in the Prudhoe Bay area has displaced cow/calf groups from the Central Arctic Herd (CAH), and that concurrent to such development, CAH use of the Canning River Delta calving ground within the 1002 area has increased (page 106). In effect, development at the Kuparuk and Prudhoe oilfields has displaced part of the herd's calving to the 1002 area. The 1002 report fails to address how such likely displacement of PCH caribou from its core area will be mitigated in view of the fact that calving displacement has already occurred, and that similar oilfiled development is occurring or planned to occur west of the refuge (Pt. Thompson) and east of the refuge (Yukon North Slope). There will be fewer and fewer places for calving grounds to be displaced to. The impacts of the actions on ANWR cannot be looked at in isolation, but must be weighed in terms of cumulative and chronic impacts on the range of the Porcupine Caribou Herd.

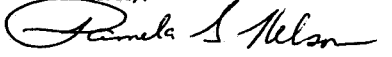
2. An economic analysis examining a decline in the caribou population and subsequent loss of its value to subsistence and loss of sport hunting and recreation revenues was not included in the report. There has been considerable publicity lately that one sockeye salmon in Bristol Bay was worth more than a barrel of oil last summer. Similarly, one caribou taken for subsistence is worth over $300 in meat value alone, not to mention the replacement costs to produce and transport an equivalent amount of beef to rural areas. Value added to the state's economy for each sport- harvested caribou could easily average $1000. Therefore, total value of about 2000-5000 caribou taken for subsistence, and another 500 taken for sport, exceeds $2,000,000 per year by the most conservative estimates. These figures over the next 20-30 years, the life of an oilfield, are significant, and should have been considered in the report.

3. The eastern portion of the 1002 area is critical to the long-term ecology of the Banks Island lesser snow goose population. The Report to Congress proposes a stipulation restricting aircraft altitude to at least 2000 ft (page 147) to minimize disturbance to the staging snow geese. The literature documents frequent cases of snow goose disturbance from ground personnel, vehicles, and low-flying and high-flying aircraft alike. In fact, habituation to these disturbances has not been documented for snow geese, even in the heavily developed wintering areas of California. Weather conditions on the coastal plain during the September staging period are usually too low to permit pilots to safely fly anything other than low (100-500 ft) altitudes. Since altitude restrictions are not effective, and undisturbed intense feeding prior to migration is energetically essential, the only way to avoid significant adverse impacts to the snow goose population using the ANWR staging area is to close it to all activities during the month and a half of staging. The proposed stipulations for surface and aerial closures of the same area during muskox and caribou calving combined with closures for snow geese dictate that the entire eastern third of the 1002 area would be closed much of the time between April 15 and September 30. The Report to Congress does not address whether such closures in a major oilfield are practical and enforceable over the long term. Similar efforts to maintain temporal and spatial closures in the Prudhoe Bay area have not been successful over the long term. The oil companies found such closures too restrictive and have gradually tried to have them relaxed, to the detriment of the wildlife. Regulatory agencies frequently have been unable to maintain such closures beyond the initial few years after agreement, due to political pressures from industry.

A recent poll conducted for the Alaska Oil and Gas Association concluded that about 70% of the Alaskans contacted were in favor of furture development of the ANWR coastal plain. Conversely, a write-in opinion forum published in two January 1987 issues of the Anchorage Daily News showed only 38% of the responses favored future oil development on ANWR. More than half of the responses in The News were in favor of the No-Action or Wilderness alternatives.

Because the high caribou, migratory bird, and regional- international subsistence values of the ANWR Coastal Plain cannot be adequately protected by Alternatives A,B, or C, the most prudent choices are No-Action (Alternative D) or Wilderness (Alternative E). The long-term value of these wildlife resources should not be sacrificed in favor of the short-term economic gains afforded by oil development.

Sincerely,



Pamela S. Nelson

cc: Senator J. Bennett Johnston
Senator Ted Stevens
Rep. Don Young
Rep. Morris Udall
Governor Steve Cowper

P.O. Box 270
Kotzebue, Alaska 99752

February 4, 1987

U.S. Fish and Wildlife Service
Attn: Division of Refuge Management Resources
2343 Main Interior Building
18th and C Streets, N.W.
Washington, D.C. 20240

I would like to state my opposition to oil development on the Coastal Plain of the Arctic National Wildlife Refuge. I support Alternative E, Wilderness in the Draft Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment.

The arguement used to justify the opening the Arctic National Wildlife Refuge to oil and gas development is weak at best. Oil and gas supplies are needed for our country's economy and defense but our Country's National Wildlife Refuges should not be sacrificed to produce oil. Oil is not a renewable resource, we will eventually need to adopt alternative energy sources. The question is, should we destroy our country's limited resources and endanger the wildlife populations before we come to terms with the fact oil supplies will eventually be depleted, or should we develop alternate energy sources now and preserve some areas of our country in their natural state for future generations?

I think the destruction of the resources on the Arctic National Wildlife Refuge would be too high a price to pay for a twenty percent possible chance of recoverable oil on the Coastal Plain.

Developing the coastal plain would have serious adverse impacts on wildlife. Major development is proposed to take place in the critical staging area for snow geese, the denning areas for polar bear and the year round habitat of muskoxen. Oil development could result in "Increased disturbance with possible avoidance by muskoxen of 71 percent of their high use, year-round with calving, habitats in the 1002 area resulting in a change in distribution, population decline, or no further expansion of the 1002 muskoxen population." (Draft Arctic National Wildlie Refuge, Alaska, Coastal Plain Resource Assessment. p.114).

Development could also lead to "Displacement of caribou from approximately one-third of the core, concentrated calving areas with in the 1002 area resulting in a large part of the projected populaton decline or distribution change for 20-40 percent of the Porcupine Caribou Herd" (Ibid. p.132). In addition the proposed pipeline bisects the calving ground of the Porcupine Caribou Herd and could well block their movements to critical insect relief habitat along the coast.

Much has been made of the successful proliferation of the Central Arctic Caribou Herd in the face of the Prudhoe Bay development. "Analogies comparing the effects of current oil development on the Porcupine Caribou Herd must be drawn with caution. Movements, density and traditions of the Porcupine Caribou Herd differ from those of the Central Arctic Herd." (Ibid. p.106). One very basic difference between the herds is that the Central Arctic Herd population is estimated at 10,000 animals versus a population of 180,000 animals in the Porcupine Caribou Herd. Is it wise to extrapolate the pattern of the Central Arctic Herd to a Herd that is 18 times the size?

Development would have a major impact on water supplies in the Refuge. "As much as 15 million gallons of water may be needed to drill an exploratory well. Taking this amount of water from the deficient 1002 area could have a major adverse effect."(Ibid. p.99). "The large quantities of water required for development drilling on the 1002 area are not available."(Ibid. p.101). Why pursue a course of development when studies show the limited supplies of water are inadequate to meet the oil development needs?

The case for allowing oil development on ANWR's Coastal Plain is being justified in part "on the ability of industry to minimize damage as learned from oil and gas activities elsewhere in the Alaskan Arctic."(Ibid. p.III.) I think the facts show the industry still has a lot to learn. The oil industry is still incurring significant damage on the resources. This assessment report anticipates moderate to major negative effects to Permafrost, Gravel Supplies and Ambient Noise Levels if Alternate A is selected. It projects "Increased noise and disturbance levels displacing wildlife throughout the 1002 area." (Ibid. p.131). Oil spills would also be a threat to the resource. "Any spill of oil or other hazardous materials along the coast could severely affect coastal and marine habitats and fish and wildlife." (Ibid. p.105). "Accidental spills of crude oil and refined petroleum products are an inevitable consequences of oil field development. Since 1972 (at Prudhoe Bay) some 23,000 mostly small spills have been reported to the Alaska Department of Environmental Conservation." (Ibid. p.103). Even the limited seismic exploration on the 1002 area during the 1984-85 resulted in leaks of crankcase oil, antifreeze, and hydraulic fluid from vehicles. (Ibid p.102).

P-72

I do not believe the adverse effects and resulting destruction of ANWR's Coastal Plain resources is justified to remove limited amounts of oil. The Arctic National Wildlife Refuge represents the last large area of unaltered tundra ecosystem in the United States. I believe we owe it to future generations to save intact representative areas of the major ecosystems of the world. Millions of acres of similar habitat along the coast west of ANWR have already been sacrificed for oil development. The remaining coastal tundra habitat in ANWR is only a small percentage of what was one time available.

Sincerely,

Kathleen M. O'Reilly

cc:

Ted Stevens
U.S. Senate

Frank Murkowski
U.S. Senate

Don Young
U.S. House of Representatives

Morris Udall
U.S. House of Representatives

Bennett J. Johnston
U.S. Senate Energy and Natural Resources Committee

Steve Cowper
Governor, State of Alaska

January 22, 1987

P.O. Box 338
University of Alaska-Fairbanks
Fairbanks, AK 99775-1040

U.S. Fish and Wildlife Service
Attn: Division of Refuge Management Resources
2343 Main Interior Building
18th and C Streets, N.W.
Washington, DC 20240

Gentlemen:

Attached is a copy of a letter I've written to Senator Bennett Johnston as Chairman of the Senate Energy and Natural Resources Committee, regarding the Arctic National Wildlife Refuge and the recently proposed "1002 Area" oil and gas development.

I strongly oppose this development. I also believe the Draft Report reflects significant weaknesses in the environmental impact assessment. I outline my reasons in some detail in the attached letter.

Please register my concern and my position. Thank you.

Sincerely,

Jon Pfeffer

Jon Pfeffer

P-74

January 22, 1987

P.O. Box 338
University of Alaska - Fairbanks
Fairbanks, AK 99775-1040

Senator Bennett J. Johnston
Senate Energy and Natural Resources Committee
Senate Office Building
Washington, DC 20510

Dear Senator Johnston:

I'm writing to express my strong disapproval of Secretary of the Interior Bill Horn's recommendation to allow full oil and gas development within The Arctic National Wildlife Refuge's 1002 area.

I feel the preferred alternative asserted by the Secretary in the Draft 1002 Report is a fundamental policy statement. It promotes perceived immediate economic benefit over a more incremental, less tangible, but permanent benefit - more complete than and certainly inclusive of economic value. This statement represents neither me nor, I suggest, the American public. Give us research and development in a sustainable energy future, specifically in renewable energy resources - and maybe we'll have something to show for ourselves as a nation even before the proposed development of ANWR would yield its alleged bounty.

Of the alternatives considered, Secretary Horn recommended full development notwithstanding the acknowledged unavoidable and very significant effect upon each of the concerns for which the entire Range (and subsequent Refuge) were originally established. The 19% chance of recoverable oil certainly does not merit full development. The prices of oil assumed in the report greatly exceed short-term projections; there is time for more study. . . . although one has to wonder if the problem lies more in evaluation of data than actual compilation. (Horn's introduction to the 1002 report represents what one local writer calls "a 'seam'. . . a government analysis in which you see a difference between what the staff wrote and what their bosses concluded." The 1002 report is full of seams.)

There should be no rush to avoid a circumspect public assessment and comment period. The 1002 Draft Report was initially published in insufficient quantity, and even with the recent extension for public comment, we (the public) find ourselves bombarded with information and analysis, much of it, of course, contradictory. My qualms regarding the 1002 Report and its proposed development include the following:

1. An unacceptably narrow perspective is being used to assess the environmental impact. The 1002 area is dissociated with adjacent oil fields currently operating and potential future leases, including off-shore leases. The impacts will be not merely distinct , or even additional, but synergistic. My concern is not merely for the caribou or any other single species as much as for the unparalleled

diversity indigehous to that area. That diversity is 100% guaranteed, and is dependent on the 1002 area in the way our bodies depend on our kidneys, for example. We do a disservice by discussing sizes of areas; we should instead assess function. Minimal management on the rest of the Refuge doesn't cut it. Adjacent wilderness and full development are not compatible.

Outside of the Refuge there are roughly 1100 miles of U.S.-owned Arctic coastline. Approximately 25 of those 1100 miles are presently protected from oil and gas development. We need more - and we're only asking for what already is.

2. The impact of natural gas development is not assessed. While this may be convenient and economic for the purposes of limiting the scope of research, it is misleading; it renders the environmental assessment incomplete.

3. Both The Alaska Department of Fish and Game and The Alaska Department of Environmental Conservation find the study lacking in essential information.

4. The impact of hazardous wastes generated by future development is not sufficiently addressed. Recognizing that the political clout of Big Oil has successfully prevented oil wastes from being categorized as "hazardous" by the E.P.A. (ludicrous as that is to members of the public as well as the scientific community), I still want to know how this quantity of waste would be handled. Current methods on the Slope are not effective.

5. Gravel and water are limiting factors. Removal of such quantities as are needed within the 1002 area will adversely affect the various watersheds - not merely the hydrology, but the entirety of the ecosystem based in them. Notable losers will be fish and the many predators of those fish.

6. The geology of most of the 1002 area is "complexly folded and faulted" according to the report, "vastly different from the relatively simple structure that underlies the coastal plain west of the Arctic Refuge, such as Prudhoe Bay." What is not contained within that area contains, according to a local journalist, the same oil-bearing structures as the shallow West Sak and Ugnu deposits of Prudhoe. These deposits are of such low quality that the fields are actually cased off from operating adjacent wells. Additionally, we're talking about 26,000 feet deep wells, more than one winter of drilling, for the elusive oil. This situation clearly promotes many exploratory wells - and much attendant impact.

7. Too many proponents of ANWR development cite the Prudhoe Bay pipeline as exemplary of wildlife management and ready adaptation. The Refuge is distinct topographically, and few correlations can be drawn between the respective ecologic communities. Additionally, the caribou "success" at Prudhoe is very moot; a distinguished University of Alaska-Fairbanks wildlife professor, who has spent years studying those caribou, states unequivocally that the impact on that population is decidedly negative.

8. "Project M" or "Megatrade", through which the U.S. Fish and Wildlife Service attempted to negotiate trades of land and subsurface rights with both Native corporations and the State of Alaska, was - and continues to be - irresponsible. Moreover, it undermines Congressional intent. The public's impression is that there are lots of cards under the table here, and the game is starting to stink.

To sum up, a notable portion of Alaskans oppose ANWR development, although we are not represented in Congress as such. We, like those in the rest of the country, prefer a viable energy future, a forward-looking plan, and an active research and development program in renewable energy. The 1002 area of The Arctic National Wildlife Refuge is not the answer to our needs.

Please accept the challenge to vote NO on 1002 development. Give us Wilderness, protect the values for which we established the Refuge, and get the issue out of the way. At the very least, give us more research - on both oil probabilities and environmental impacts.

Thank you.

Sincerely,

Jon Pfeffer

Jon Pfeffer

P.75

Comments re.: Department of Interior
November 1986 Draft Arctic N.W.R.
Coastal Plain Resource Assessment

From: Martha K. Raynolds
1099 Farmers Loop
Fairbanks, AK 99709

I appreciate the opportunity to comment on the Draft ANWR Coastal Plain Resource Assessment, and sincerely hope that the deficiencies pointed out in my comments and others' will be addressed in the final document. I thought most of the report was well prepared, but found several problems with Chapter VI Environmental Consequences, and found the Executive Summary to be a very poor representation of the contents of the report. I also disagree with the Interior Department's conclusion that Alternative A, full leasing of the coastal plain, should be the recommended alternative.

P-27-1

1. Water and Gravel Resources
The problems caused by lack of water and gravel resources on the coastal plain are not adequately addressed. Although their scarcity is mentioned, the alternative measures which would be required to extract the gravel and water required for development are not fully described. Consequently, the impacts which would be caused by gravel and water extraction are not covered in Chapter VI.

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P-27-2

2. Central Arctic Caribou Herd
The impacts of development on the Central Arctic Caribou Herd (CAH) are not adequately described. The discussion in Chapter VI does not include the impacts due to the pipeline and road which would be required to join the 1002 area to the Trans-Alaska Pipeline (TAPS). This east-west connecting corridor would be a prerequisite for development of the 1002 area. It would have a very significant impact on the CAH, by cutting across its summer habitat, used for calving and insect relief. The impacts of this pipeline and parallel road must be included in the discussion of the impacts of development of the 1002 area. The impacts to the Porcupine Caribou Herd are thoroughly addressed.

P-27-3

3. Petroleum Resource Potential
Chapter III states that there is a 19% chance of there being an economic size accumulation of oil and gas on the coastal plain. The Executive Summary does not even mention the 81% probability that NO economic oil or gas exists in the coastal plain. It only discusses the probable size of such an accumulation, should it occur. This is very misleading. The full probabilities of finding oil and gas should be presented very clearly in the summary.

P-27-4

4. Discussion of Impacts in Executive Summary
The Executive Summary glosses over the impacts of development as described in Chapter VI. The statement, "Most adverse effects would be minimized or eliminated through carefully applied mitigation....exploration and development at Prudhoe Bay indicates minimal impact on wildlife resources. Hence it is reasonable to assume that development can proceed on the coastal plain and generate similar minimal effects.", is EXTREMELY misleading. First, the impacts to caribou, muskox, and snow geese, as described in Chapter VI are MAJOR impacts that cannot be mitigated. Secondly, development at Prudhoe Bay has had some very significant impacts on wildlife in the area. And thirdly, the Prudhoe Bay area is not directly comparable to the 1002 area. The ANWR coastal plain provides much more critical habitat for caribou, muskox and snow geese than Prudhoe Bay ever did. Most of the impacts of the recommended Alternative A are very clearly stated in Chapter VI, and should be included in the Executive Summary.

5. Recommended Alternative
Personally, I would recommend Alternative E. If and when oil and gas resources become so scarce and precious (as they are clearly NOT right now) that we should risk the wildlife and wilderness resources of the ANWR coastal plain, an act of Congress could allow drilling. Until such time, the coastal plain should be protected. If development interests are so strong that drilling cannot be prevented, why is Alternative C not adequate? The report states that even under Alternative A, considerable further exploration would have to be carried out before any companies would be interested in leasing. If preliminary exploration needs to be done, why not allow that and THEN review the data and assess the tradeoffs with more complete information to decide whether to open the 1002 area to leasing?

Signed Martha K. Raynolds
Martha K. Raynolds
Biologist

Date December 1, 1986

My name is Herman L. Rexford, age 72 years old I am an Inupiaq from the village of Kaktovik, located on Barter Island on the Beaufort seacoast.

I am a Board of Director member of our village Kaktovik Inupiat Corporation. and also a Board of Director member of Arctic Slope Regional Corporation for over ten years.

Lord also I am a Commission member of North Slope Borough Inupiat History, Language and Culture Commision representing of Kaktovik village.

And also Elder of Kaktovik Presbyterian Church here in Kaktovik.

Now I would like to present of comment and Concern about ~~the~~ my own feelings about oil and gas development in the Coastal plain and in the 1002 area.

I think and my feelings that if this 1002 area open for oil and gas development in the Arctic Wildlife Refuge will be loss of our subsistence hunting opportunities throughout approximately one half of the 1002 area myself I think it will hurts of our hunting area and I don't want to see that happen Change of hunting eskimo food for our families.

I hope our subsistence must be looked at in a manner that keeps areas open to hunting that are very important for our needs.

We eskimos in the Kaktovik would like to see this support comes with the understanding that certain stipulation be met toward the protection of wildlife, its habitat, subsistence lifestyles and the social economic future of Kaktovik.

I'm hoping that Interior State Secretary of Alaska and Governor Steve Cowper help us All of our concerns And Hoping that Secretary of States consider and think about it so he can help us.

That's all my concerns and we want your support on our subsistence way of life

Thank you.

Herman L Rexford

KAKTOVIK, AK 99747

DO YOU WANT TO MAKE PUBLIC COMMENTS?

If you would like to speak at the hearing today, please fill in the blanks below and turn it in to one of the Fish and Wildlife Staff members present. You need not complete this sheet to submit written comments. Thank you.

Please print

Name Malcolm B. Roberts

Mailing Address 2001 Churchill Drive

Anchorage, Alaska 99517

Check appropriate box below:

☐ I am here to offer my own views.

—or—

☐ I am speaking for _____
(please enter name of organization you represent)

P-78

please see last page

Thank you

TESTIMONY
ON DRAFT 1002H REPORT ON ANWR
By Malcolm B. Roberts
2001 Churchill Drive
Anchorage, AK 99517

Ladies and gentlemen. My name is Malcolm Roberts. I am a consultant in government and community relations here in Anchorage, and I am representing myself.

I have read the 1002H report and would like to commend you on its quality and thoroughness. Unfortunately, having worked in Washington, D.C. as a Special Assistant to the Secretary of the Interior, my hunch is that very few members of the U.S. Congress will take time to read it.

Instead they will rely mainly on the comments in the Washington Post, The New York Times, their local newspapers and on the personal briefings they receive from staff and from lobbyists on both sides of the issue.

In other words, they will be inclined to approach a scientific subject, which you have presented very well here, and react to it on the basis of media reports and emotional appeals.

In my view, America is ill-served by ~~faddist~~ advocacy journalism and bumper sticker wisdom.

One headline that reads "Oil developers trying to invade wildlife sanctuary" can be enough to sway an uninformed Congressman's vote.

For that reason, if sound public policy decisions are to be made by Congress, it is important that the substance of this report is presented in a manner that will counter some of that emotionalism.

I would like to suggest, not a correction of your report, but some additional information added to your graphics which illustrate effects on the biological environment. When discussing each specie of wildlife (as on page 149) I suggest that you add the population totals.

Secondly, I recommend that a graphic be included on the amount of public use.

P-79

In August of 1970, I accompanied the U.S. Secretary of the Interior as we flew over the Coastal Plain, doing what many of you have done, and I hope you will urge all members of key Congressional committees to do likewise. We spent the day in a helicopter. We were looking for wildlife.

After all, Congress in its wisdom dubbed this vast section of acreage a Wildlife Refuge.

We saw several dozen caribou from the Central Arctic herd. We saw one brown bear. It was dragging the freshly killed carcass of a moose. We saw a large number of snow geese. But for the expense and effort dedicated to the day's activities, the rsults hardly compared with a visit to Denali National Park.

If Ralph Nader, in the spirit of consumer protection, would spend $2,500 to fly coach from Washington, D.C. to Anchorage to Deadhorse and then charter to the Wildlife Refuge and back, I would suspect that he would return irate.

Mr. Nader, or any American citizen concerned about truth in packaging, would be disappointed to learn that other than caribou, most wildlife do not choose to migrate north towards this country with such little forage and no cover.

In fact, for ten months out of the year, there is virtually no wildlife in this Wildlife Refuge.

Your report details the evidence you have been able to gather about polar bears, brown bears, muskoxen, dall sheep, wolves, wolverines, arctic foxes, whales, seals, peregrine falcons, golden eagles and waterfowl.

That list is enough to make the average American's heart jump.

My point is...as this area of nearly 3,000 square miles or some 1.5 million acres, is being reviewed by Congress for its highest and best use, let's be more graphically specific.

Let's start with moose. I quote from your report:

"The number of moose using the 1002 area at any one time probably does not exceed 25." In other words, less than 1 per 100 square miles. The moose density in Anchorage is much far greater.

The Alaska Department of Fish and Game estimates that there are between 144,000 and 160,000 moose in the state.

Dall Sheep: I quote: "Dall sheep are very rare in the 1002 area." Even the unitiated realize that dall sheep, like most mountain sheep, live in mountainous areas. These animals do not wander north onto the flat or rolling lands of the coastal plain. By the way, there are some 60,000 to 80,000 Dall Sheep in Alaska.

Wolves: I quote: "no dens have been found" in the 1002 area, and "The number of wolves using the 1002 area on a seasonal basis is low and apparently does not exceed 5-10 animals annually."

Wolverines: Quote: "recent FWS studies have resulted in very few sightings." Your report places one guess at around 90.

Brown bears: "use is estimated at one bear per 30 square miles, or approximately 108 bears." Having spoken with those who flew a grid of the entire area for the gravity studies, I find this number hard to believe. But if it is indeed accurate, it is important for the American public to know that the Ak Dept of Fish and Game estimates that there are between 32,000 and 43,000 brown or grizzly bears in Alaska.

Polar bears: the report indicates there is a population of roughly 2,000 polar bears in the Beaufort Sea, 87% of whose dens are located on the ice pack offshore. Quote; "in the 1002 area, 1 to 2 dens were found in 4 of the 5 years" between 1981 and the present. "Another 5 dens have been located on ice near the 1002 area."

Muskoxen: Reintroduced by Governor Walter Hickel in 1969, the muskoxen herd in the entire 18 million acre Refuge has grown from 69 animals to 476. Domesiticated at the University of Alaska, Muskoxen have shown no adversion to man's presence, as long as man isn't hunting them.

Caribou: You estimaste that there are approximately 180,000 caribou in the Porcupine herd and another 2,000 - 3,000 Central Arctic caribou move from Prudhoe and Kaktovik into the 1002 area after the Porcupine Herd moves on. Over all, there are between 550,000 and 600,000 caribou in Alaska distributed in 25 distinct herds. State biologists say that nearly all of these herds are healthy and growing.

Geese: I quote: "The coastal plain is not a major nesting area." It is, however, a major staging area -- as many as 595,000 waterfowl gather on the entire staging area that stretches along the coast into the Yukon territory.

It should be noted that Prudhoe Bay, with its high level of oil industry presence, continues to serve as a nesting area for all major species of geese, for swans, ducks and other waterfowl.

So, in summary, my recomendation is that you include a chart on

with your wildlife population estimates. If my reading of the report is accurate, it would go something like this:

Dall Sheep	none
Wolves	5-10
Moose	25
Wolverines	90
Brown bear	108
Muskoxen	476
Polar bear dens	1-2
Caribou	183,000
Birds and waterfowl:	
Swans	400 - 500
Ducks	35,000
Geese	105,000
Golden eagles	25-75
Peregrine falcon eyries	2 (formerly occupied)

One element I did not find reported in the 1002 study, is the amount of human activity, other than subsistence use, in the 1002 area.

I would like to know, and I believe the American people deserve to know, how many people visit this area annually.

If there is very little wildlife there. Which is a fact. If nearly no one, other than government personnel visit there, which is a fact. And if Congress refuses to open it up to tap potential oil and gas reserves...someone needs to answer the question, what then is it for? Thank you.

2532 Roland Road
Fairbanks, AK 99709
January 20, 1987

U.S. Fish and Wildlife Service
Division of Refuge Management
2343 Main Interior Bldg.
18th and C Streets, N.W.
Washington, D. C. 20240

Gentlemen:

This letter responds to a request for comments to the draft Arctic National Wildlife Refuge, Alaska Coastal Plain Resource Assessment prepared by the Department of Interior.

From 1976 to 1984 I was employed by the U.S. Fish and Wildlife Service in Alaska where I served on the staff of the Arctic National Wildlife Refuge (ANWR) as an airplane pilot and Assistant Refuge Manager. I spent many hours in the air and on the ground within the coastal plain of ANWR.

Nowhere does this report make a purposeful statement that reflects the fact that the coastal plain of ANWR is one of the finest wilderness and wildlife areas in North America. With the exception of a small sliver of designated wilderness east of the Aichilik River it is virtually the only natural area on the north slope of Alaska and thus in the United States that is not dedicated to oil exploration and/or development. The original purpose of the Arctic National Wildlife Range established in 1960 was to preserve unique wildlife, wilderness, and recreation and scientific values. In a betrayal of those who worked so hard to have this area protected the ANILCA legislation does not even mention the word wilderness as one of the purposes of the expanded Arctic National Wildlife Refuge. Yet wilderness preservation is one of the key issues and it is what makes ANWR in its own unique way comparable to any of our finest national parks. Would the American public really approve of the degradation of a national treasure if this report unbiasedly assessed what was really at stake?

It is with considerable sadness, though not surprising, that I find the Department of Interior recommending full scale leasing of the ANWR coastal plain. Past actions of former Secretary of the Interior Watt telegraphed the intent of this administration regarding the future of ANWR. Watt traded away the subsurface rights to native lands around the village of Kaktovik and along the near coastal area south of Barter Island without the opportunity for broad public review. Heretofore the natives had title to only the surface estate of these lands precluding development of the subsurface estate. With public control of these lands within ANWR lost to private interests seismic exploration took place on these lands and Chevron drilled the first exploratory well within ANWR. All of this occurred prior to completion of this report and a decision by Congress, apparently in an attempt to prejudice the outcome in advance.

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I flew over the Chevron well site during the summer of 1986 and saw that stack upon stack of pink styrafoam left behind when the well was abandoned had been blown apart by the wind and was scattered across the tundra. Oil exploration and development is seldom the clean slick affair that this report would have one believe.

I understand the U.S. Fish and Widllife Service is working on a project known by some as the "mega trade". The Department of the Interior, apparently confident of the disposal of ANWR, intends to pursue giving up the subsurface rights to lands under the ANWR coastal plain in exchange for surface rights to native inholdings within other Alaska refuges. This decision would likely give the oil companies a freer hand to operate within ANWR should Congress open the area up. It should also be pointed out that it took a law suit to gain the right of the public to comment on this report yet hearings in Alaska were not held in Fairbanks and Arctic Village even though they were requested.

One could go on with the foregoing littany which demonstrates the prodevelopment bias of the Department of Interior. This is not necessarily bad except that any recommendation of the Department of Interior regarding the final disposition of ANWR lacks credibility because of internal bias towards one point of view. If one is truly interested in an objective assessment of the national interest with regard to the final disposition of the ANWR coastal plain one will not find it in this report.

If there is oil under the coastal plain and development is allowed to proceed the value of the coastal plain as wilderness will be destroyed. One cannot deface a "Mona Lisa" and still expect to have a masterpiece. While it may be speculative to say what may happen to the wildlife and especially the caribou of the coastal plain it is a well established fact that if you destroy wildlife habitat or deny use of same, wildlife species that cannot adapt to altered circumstances will not survive. There is more than just a slight possibility that more than one species of wildlife will not be able to cope with the various disturbances and destruction of habitat resulting from exploration and development of the ANWR coastal plain. Is the possible gain in the short term worth permanently degrading a natural area and placing at jeoprady the well being of wildlife using the ANWR coastal plain in the long term? The Department of Interior apparently believes that it is in the national interest to allow one of the nations premier wildlife and wilderness areas to be the next drilling target because it is alledgedly highly prospective for oil. Yet at the same time this nation has no national energy conservation policy, no alternative fuels program and this administration has relaxed auto fuel efficiency standards. This nation is like a child on a candy eating binge except our candy is oil. Now the public is being asked to risk a national treasure to continue this gluttonous diet. This should not be the next target for exploration, it should be the last if at all.

This nation will continue to be dependent on foreign oil imports far into the future irregardless of any possible contribution from ANWR because there is a defacto policy of energy consumption rather than conservation of a non-renewable resource. Any oil from ANWR will be

sucked out in 20 to 30 years leaving in its wake a degraded landscape and placing at risk far into the future nationally and internationally significant species of wildlife. Humpty Dumpty cannot be put back together again once the shove is given.

In the long run I believe the net benefit to this nation from retaining its premier wilderness areas in tact will far outweigh the short term benefits that may be gained from non-renewable resource extraction. One has only to look at our own national parks and refuges and those around the world to realize the benefits and wisdom of preserving our important naturalareas for the enjoyment of future generations.

The argument that only the elite visit ANWR is "baloney". People from all walks of life make a deliberate choice to visit ANWR and save their money to do so just like anyone else who wishes to take a wilderness vacation. It is expensive but so is a vacation to Europe or some other distant point. It is good that there are still wild places that are not heavily visited. One of the primary reasons people visit ANWR is to enjoy the quiet and solitude of a wilderness setting. This opportunity is becomming increasingly rare as the worlds wild places dwindle to a few remnants. People need a place where they can come and find spiritual renewal which is not possible when hoards of people are present. Development of the coastal plain would devestate the quiet and solitude that people seek and are now able to find in ANWR.

Let us protect for now this natural masterpiece that is the ANWR coastal plain. Put this one in the bank and give it the protection of wilderness status. If there is oil it is not going anywhere. The price you are asking is too steep. Let's not make a premature withdrawal and risk throwing the bank into default until we are sure there is no other alternative.

P-83

Sincerely,

Donald E. Ross

der

P.S. Surprise me and recommend wilderness designation!

On page 75 if states that "new surveys might not differ much from the cumulative total of about 1300 miles already collected." Not mentioned here or elsewhere is the fact that in addition to the hundreds of miles of seismic lines impacts to the tundra also occur from the many additional miles of random trails created by supply trains that haul fuel and other supplies to and from seismic trains. "1300" miles of seismic line provides the reader with no clear picture of the actual miles of trails and back and forth travel that occurs along any one seismic line.

Page 76 Para. 1: What is reasonably near the coast? Use of rolligons to transport heavy equipment to a drill site might or might not be analogous to the use of "winter trails" by seismic crews. This would depend on the amount of snow cover, type of terrain and the number of passes over any one trail. How are rolligons used with "care"?

Page 99,Para. 2: It states that additional crews "could" increase the overall impact. It stands to reason that additional crews "would" increase the overall impact rather than could as this carefully worded sentence implies. Additional crews would mean more supply trains travelling across the tundra to supply seismic trains creating new trails and increasing the impact on the tundra.

Page 99, para 4: What is about 6 inches? Six inches of snow is a bare minimum standard. So stated it would allow operations in areas where there may be less than 6 inches of snow as long as there was about 6 inches in most places. This imprecise and minimal standard is not one that will insure the greatest protection of vegetation from seismic and other exploratory activities.

Page 102: Ice well pads and gravel-timber insulation pads are mentioned as ways to minimize the amount of gravel needed. In the following paragraph subsurface disposal of drilling muds is stated as a means of eliminating the need for large reserve pits. Yet when one reads about mitigation on page 104 the employment of any of these techniques to minimize effects on vegetation is not even mentioned or discussed.

The conclusion on page 105 that the effect of full leasing is anticipated to be minor on coastal and marine habitats is not accurate. Coastal and marine habitats would be significantly modified in places where port facilities are developed and causeways constructed to serve the same not to mention modification to coastal habitats from transporting equipment and supplies inland from these sites. Some dredging may also be required. It may be true that the effect on coastal and marine habitats from fuel spills is anticipated to be minor, at least until one occurs, but at least this conclusion would be more consistent with the foregoing discussion.

On page 106 it states that analogies comparing the effects of current oil development on the CAH and effects of potential 1002 development on the PCH must be drawn with caution. On page 108 the statement is made that displacement of the PCH from a core calving area to a less desirable area would be expected to reduce caribou productivity. Followed by a statement that no recognizable, long-term effect on the

the CAH as a result of displacement by oil development in the central Alaskan Arctic has been demonstrated to date. This does not strike me as a cautiously drawn analogy since the implication is because it did not happen to the CAH it would not happen to the PCH particularly when in a later paragraph it states that the lack of observable adverse effects from displacement exhibited by the CAH would be unlikely for the PCH.

The period for which data on the PCH is available from 1972 to 1985 is a relatively short one compared to the total unreported biological history of the herd. During the period from 1972 to 1985 the PCH also calved and moved in significant numbers west of the Hulahula River and can be expected to do so in the future. Just because the herd was observed to calve in significant numbers east of the Hulahula River in most of these years does not mean that this situation will necessarily continue in the future. A core calving area is a useful point of discussion for biologists since it reflects where caribou were conscentrated during the years of observation. It would however, be a mistake to conclude that because caribou used one area more than another during a particular period that the area used less frequently was also less important. From the standpoint of the well being of the herd denial of just part of the herd's historic calving grounds could have long term negative consequences if exploration and leasing schemes are based on the assumption that one part of the range is less important than another simply because the period of observation was too short and we had an incomplete picture of herd dynamics.

RICHARD V. SHAFER
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PROFESSIONAL ENGINEER
ALASKA CE 3640

ARCTIC ENVIRONMENTAL ENGINEERING
ARCTIC MARINE SYSTEMS
PETROLEUM OPERATIONS PLANNING
SPILL CONTINGENCY PLANNING

01/21/1987

U.S. Fish and Wildlife Service
Attn: Division of Refuge Management
2343 Main Interior Bldg.
18th and C Streets, N.W.
Washington, DC 20240

I would like to offer the following comments regarding the draft document, *Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment*, published by the U. S. Department of the Interior in November 1986.

P-85

I have been a resident of Alaska since 1972, and during this time I have been involved with a variety of operations in the arctic and subarctic tundra areas of the state. My employment during this period has been with the federal government as well as with private industry. Most of my experience in this state has been associated with environmental aspects of petroleum exploration and production. I have degrees in civil, petroleum and environmental engineering, and I'm a registered professional engineer in Alaska. I have a strong interest in promoting the environmentally responsible economic development of our resources.

I am presently employed by an industry-sponsored oil spill response association. However, I am writing this letter as an interested citizen, not as an industry spokesman.

I support the Secretary's decision to propose petroleum leasing on the coastal plain of the Arctic National Wildlife Refuge (ANWR) for the following reasons:

- o Western countries in general, and the United States in particular, need to reduce the present vulnerability to interruption of oil imports from the Middle East.
- o We in the United States have a desperate need to reverse the deterioration of our balance of trade.

Comments on ANWR resource assessment

- o Petroleum activity in the Wildlife Refuge will create sorely needed employment opportunities throughout Alaska's economy.
- o Leasing and development of additional petroleum reserves will strengthen federal, state and local tax bases.
- o Based on industry experience in the Prudhoe Bay area, I feel very confident that with prudent planning by industry and government, oil exploration and (with luck) development can proceed in the ANWR coastal plain area without significant or long term harm to wildlife resources.

Most of the proposed mitigative measures discussed on pages 145 through 147 of the assessment are consistent with present industry practice in the Prudhoe Bay area. In general, these proposed stipulations can be expected to ensure protection of wildlife and other environmental values. You may, however, wish to consider the suggestions listed below by stipulation number.

5. Proposed stipulation 5 prohibits off-road vehicle use except by local residents of by specific permit. This is a reasonable measure provided off-road permits are quickly available in the event of an emergency such as an oil spill.

6. This stipulation would prohibit exploratory activity during summer but allows exceptions. It is very important that the mechanism for exceptions be in working order in the event of a down-hole emergency. It should also be recognized that there are risks and costs associated with seasonal drilling, e.g. a new crew cannot be as proficient as a crew which has been working together for a period, and in an emergency situation a green crew cannot be expected to respond as quickly nor as appropriately as an experienced crew.

11. Where roads and pipelines are separate, some means must be designed for periodic inspection of the pipelines.

12. What is meant by "restricted surface occupancy"? Does that mean that well pads would be prohibited within the three-mile zone?

14. Prohibition of permanent facilities within 3/4 mile of specified water courses seems excessively conservative. Facilities may require special engineering treatment near water courses, but "near" might be 20 ft in one case or 5 miles in another, depending on terrain conditions. Also, it should be noted that it is usually best, environmentally as well as economically, to develop permanent water storage facilities near water courses. Decisions on development near water courses should be made on a case-by-case basis.

15, 26. Aircraft altitude restrictions should apply not only to petroleum operators but to government and scientific activities as well.

Comments on ANWR resource assessment

27. Fences can cause problems on the Arctic Coastal Plain. Tightly woven fences (e.g. Cyclone fences) can produce undesirable snow drifting. Open fences (e.g. cattle fences) allow snow to pass but can entangle caribou antlers. In any event, the fences must be placed at considerable distance from facilities in order to allow room for deposit of snow which has been cleared from the facility area. This deprives grazing animals of what is otherwise good habitat within the fenced area. Also, caribou often seek out production facilities as insect relief habitat, especially when they are being harassed by nose bot flies; fencing would deprive them of this habitat enhancement. Fences may be a requirement at some locations for protection of animals from specific hazards and for security reasons, but a blanket requirement for fencing seems unjustified.

I hope these thoughts and suggestions are helpful. I would welcome a phone call at 907-345-3142 during working hours if there are questions or comments on any of these points.

Sincerely,

Richard V. Shafer, P.E.

P-86

Jeffrey Sloss
740 5th St,
Juneau, AK 99801.

January 14, 1987

U.S. Fish and Wildlife Service
Attn: Division of Refuge Management
2343 Main Interior Bldg.
18th and C Sts., N.W.
Washington, D.C. 20240

Re: Draft 1002 Resource Assessment Report on the Arctic National Wildlife Refuge coastal plain

To Whom it May Concern:

As an Alaskan resident I'm deeply concerned about the opening of the coastal plain of ANWR to oil and gas exploration. I strongly oppose the violation of Alaska's premier wilderness sanctuary and part of the only arctic coastal plain wilderness in the nation. ANWR is a national and worldly conservation treasure which should remain entirely undeveloped for the national interest.

I submit the following points about the Draft 1002 Resource Assessment Report :

Oil and gas leasing of the coastal plain could be devastating for the 180,000 (+) members of the Porcupine Caribou herd that depend on the area for calving and post-calving activities.

The report does not take into account the impacts of oil and gas development on the entire coastal plain ecosystem.

The issue of how enough water will be obtained for drilling activities (especially in winter) is a major problem apparently not dealt with in the report.

The cumulative effects of oil and gas development on adjacent state and federal leases, native lands and on the outer continental shelf are not adequately addressed.

I oppose any trading of any ANWR lands to Native Corporations or the State of Alaska.

Accidental spills of crude oil and other petroleum products are an inevitable consequence of oil and gas development and is an unacceptable threat to the fragile life of the arctic tundra.

The disposal of hazardous waste is a serious long term problem for the entire north slope which has not been solved in existing oil developments, much less this one.

It is clearly not in the national interest to promote development of the nation's only arctic coastal plain wilderness, also a world-class wildlife refuge.

Our nation's future energy requirements can and will be met by increasing conservation of energy resources and the development of viable alternative energy sources, not the squandering of perhaps the last energy reserves for a 19% chance at a few months of oil.

I urge that the U.S. Fish & Wildlife Service protect and manage the entire Arctic National Wildlife Refuge in a manner which is consistent with the conservation purposes for which it was established.

Thank you for the opportunity to comment.

Sincerely,

Jeffrey Sloss

cc. Governor Steve Cowper
Representative Don Young
Representative Morris Udall
U.S. Fish & Wildlife Service, AK

P87

U.S. Fish and Wildlife Service
Attn: Division of Refuge Management Resources
2343 Main Interior Building
18th and C Streets, N.W.
Washington, D.C. 20240

February 5, 1987

Dear Fish and Wildlife:

This letter contains my comments relative to the draft coastal plain resource assessment (1002 report) for the Arctic National Wildlife Refuge, released November 24, 1986. I will not thank you for this opportunity to comment, as I understand public involvement was only allowed as a result of litigation successfully brought against your agency by public interest groups. The Department of the Interior also failed to hold a public hearing in my home town of Fairbanks, even though a wide segment of the public requested one. I find it repugnant that my tax dollars were spent in an attempt to deny me an opportunity to comment on a public interest issue that directly involves me. Please address my comments in the final 1002 report to Congress.

I totally support Alternative E, wilderness designation, as the most responsible management strategy for the Arctic Refuge coastal plain. This area is a wildlife refuge, not a petroleum reserve. It has been protected as such since 1960, and I see no valid reason for altering this wise course of protection for internationally significant wildlife and wilderness resources.

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I feel qualified to comment on this report for several reasons. First, I have read it in its entirety. I have also studied the Baseline Reports prepared pursuant to Section 1002(c) of ANILCA. Second, I have a Bachelor of Science degree in terrestrial wildlife biology from the University of Montana. Last but not least, I am a resident of the state of Alaska, the United States, and the world. To me, being a citizen means I should be involved in assisting the formulation of wise national policy. The destruction of the surface resources of the 1002 area in the pursuit of unknown quantities of non-renewable resources is irresponsible and as such does not represent wise policy.

One of the things that disturbs me the most is that the 1002 report says development of the refuge for oil and gas is necessary in the national interest. I find this impossible to believe, when there seems to be absolutely no leadership in this country for energy conservation. I don't see many programs being implemented to promote the development of alternative energy sources, either. Without programs implemented nationwide on these two crucial fronts, which could provide our country with massive amounts of energy via savings, there can be no valid national interest argument for the destruction of an important wildlife refuge. "Destruction" is not too strong a word, as it is exactly what would happen to the coastal plain's wilderness values, as well as to much of its surface area which now supports wildlife populations.

There are numerous problems with the 1002 report. Probably the most glaring is that the Secretary's Recommendations are not based on information contained in the report. The report doesn't answer crucial questions about some of the impacts that would result from oil and gas leasing and production, even though that was its purpose as stated in ANILCA. For example, sources for water and gravel are not adequately discussed, nor is the disposal of hazardous waste. We pride ourselves in this country on being intelligent enough to avoid repeating mistakes of the past. Yet in the 1002 area, we have a government agency recommending that we do just that. The Department of the Interior is doing the American public a grave disservice by swallowing oil company rhetoric hook, line, and sinker. To point to Prudhoe Bay as a shining example of the ability of environment and industry to coexist in harmony is misstating the truth. The impacts of oil development activities at Prudhoe Bay have been inadequately studied, just as the potential impacts on the coastal plain have been inadequately addressed by both the 1002(c) and the 1002(h) studies.

The Fish and Wildlife Service has been negotiating land exchanges in the 1002 area with private corporations for years now. Why are these exchanges, which are all set to go, not even mentioned in the 1002 report? Are these exchanges in the public interest? I don't see how they can be. The justification I've heard for these exchanges is that the Fish and Wildlife Service needs to obtain the surface rights to inholdings on refuges in other parts of the state, presumably to facilitate "management and protection" of those lands. How can you reassure the public of your ability to "protect" these areas for fish and wildlife when you can't protect it in the Arctic National Wildlife Refuge, one of the oldest conservation system units in the state? Not only are you not protecting the wildlife and wilderness resources of the coastal plain, as is your mission, but by your recommendations you are ensuring their diminishment. Don't expect the public to be so gullible as to want that to happen elsewhere, too.

I could go on and on about the report's inadequacies and biases. The statements made in both the Executive Summary and the Secretary's Recommendation, relative to the area's oil potential, are skewed to favor the highest potentials possible without mentioning their low probabilities of occurrence. The report pays some lip service to subsistence uses of coastal plain wildlife, but passes on rapidly, saying that losses would be "compensated", whatever that means. The harm that development could do to subsistence uses outside the 1002 area, which are extensive, is barely discussed at all. One of the report's more important omissions is that it does not consider the many cumulative impacts that oil development, both in and outside of the 1002 area, will undoubtedly have on wildlife and habitats. To attempt to look at the 1002 area in isolation is ludicrous. It resembles a doctor attempting to do a thorough physical of a person by only examining is head. It can't be done.

As a resident of the state of Alaska, I firmly believe that it is not in the best interests of this state, or of the nation, to explore the coastal plain for oil at this time. Nor do I believe that it will be at any future date. We must stick to our commitments, made years ago, to the protection of wild places. If we don't, they will be gone, along with a part of the American soul. That is why I urge the Secretary to alter his recommendations in favor of wilderness designation, the highest and best use for the Arctic Refuge coastal plain.

Sincerely,

Laurence R. Sutton

Laurence R. Sutton
P.O. Box 84663
Fairbanks, Alaska 99708

cc: Hon. J. Bennett Johnston
Hon. Morris Udall
Governor Steve Cowper

P. O. Box 80368
Fairbanks, Alaska 99708
February 2, 1987

U.S. Fish and Wildlife Service
Attn: Division of Refuge Management Resources
2343 Main Interior Building
18th and C Streets, N.W.
Washington, D.C. 20240

RE: ARCTIC NATIONAL WILDLIFE REFUGE, COASTAL PLAIN RESOURCE ASSESSMENT DRAFT

GENERAL COMMENTS

This letter is in support of Wilderness Designation for the coastal plain (1002) area of the Arctic National Wildlife Refuge. I write as a long time Alaskan resident with extensive experience with Alaskan wildlife and wilderness. I hold degrees in biology and natural resources mangagement from the University of Alaska and have worked professionally for many years as an environmental planner and natural resource manager. My family has backpacked throughout Alaska including the Arctic National Wildlife Refuge. I know first hand the outstanding wilderness and wildlife values to be lost should the coastal plain be opened to oil and gas leasing and believe it is not in the long term national interest to forego this unique wilderness resource for the short term economic gain of oil development on the Refuge's coastal plain.

P-90

I have carefully reviewed the Draft Arctic National Wildlife Refuge Coastal Plain Resource Assessment and am impressed with the devastating impact oil and gas development would have upon the physical, biological, and social environment of the 1002 area. It is evident that there are no mitigating stipulations which can significantly reduce the inevitable loss of wilderness and wildlife values not only within the coastal area, but also throughout the entire Arctic National Wildlife Refuge as a consequence of oil development.

The Arctic National Wildlife Refuge is the nation's only extensive wildlife refuge along the Arctic coast. The Refuge was established by Congress to preserve the area's unique wildlife, wilderness and recreational values. The coastal plain of the Refuge provides essential seasonal habitat for most of the Refuge's species of mammals, fish, and migratory birds. It is an integral part of the entire ecosystem which is required by these species for survival. The inevitable and unavoidable consequence of oil and gas development on the Refuge coastal plain would be the reduction in the size and diversity of wildlife populations throughout the entire Arctic National Wildlife Refuge.

Congress mandated that the entire Refuge be administered for specific purposes defined in the Alaska National Interest Lands Conservation Act:

1. To conserve fish and wildlife populations and habitats in their natural diversity.
2. To fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats.
3. To provide opportunities for continued subsistence use by local residents.
4. To ensure water quality and necessary water quantity within the Refuge to conserve the fish and wildlife populations and habitats in their national diversity.

The report's findings indicate that the Secretary's recommendation for full leasing for oil and gas development is directly opposed to the Refuge purposes mandated by Congress. The "Recommended Mitigation" measures (p.145) are grossly inadequate and misleading. As is apparent from reading the report, there are no mitigation measures sufficient to retain the unique arctic wildlife and wilderness resources of the Refuge in view of the scope of habitat damage directly and indirectly related to oil and gas development in this biologically rich and fragile coastal plain. If anything, the report understates the environmental impact of oil development because the cumulative regional impact of potential oil development on adjacent coastal and off shore areas has not been addressed. Nevertheless, even within the narrow focus of the study, and despite the "Recommended Mitigation", the report concludes:

-"Long-term losses in fish and wildlife resources, subsistence uses, and wilderness values would be the inevitable consequence of a long-term commitment to oil and gas development in the area." (p. 143)

-"Oil and gas development would result in widespread, long-term changes in the wilderness environment, wildlife habitats, and Native community activities currently existing in the 1002 area, resulting instead in an area governed by industrial activities. These changes include displacement and reduction in the size of the Porcupine caribou herd as a result of widespread and intensive activities throughout one-third of its core calving area, as well as throughout a large part of its postcalving and insect-relief areas." (P. 143)

-"But, even with effective mitigation, herd* displacement or reduction could be as great as 20-40 percent." (p. 144)

From general knowledge of the fragile nature of the arctic coastal ecosystem substantiated by the draft report findings, it is evident that oil and gas leasing and development of the 1002 coastal plain area would:

1.-Substantially reduce or eliminate fish and wildlife populations and destroy or make unaccessible to wildlife extensive areas of essential seasonal habitat.

2.-Violate international treaty obligations particularly in regard to migratory birds, caribou, and polar bear and other marine mammals; and, by example,

*Porcupine caribou herd

encourage the expoitation of circumpolar ecosystems and wildlife resources by other nations.

3.-Significantly reduce or eliminate opportunity for continued subsistence uses not only for residents of Kaktovik, but also for residents of the interior villages in Alaska and Canada dependent upon the Porcupine caribou herd for subsistence.

4.-Significantly degrade water quality and quantity within the coastal area required by fish, migratory birds, and other wildlife.

5.-Eliminate wilderness recreational opportunities in the 1002 area and significantly degrade the recreational experience on the adjacent Refuge wilderness areas.

The justification given by the Secretary for the full leasing recommendation is the national need for domestic sources of oil and gas and the need to provide for the national security. However, the Report fails to provide sufficient evidence that oil development of the 1002 area would provide oil to significantly alter the nation's dependence on foreign sources. With a predicted U.S. oil demand for the year 2005 of 16.5 million barrels per day, and assuming that there may be a mean recoverable value of 3.2 billion barrels from the 1002 area's highly speculative potential oil reserve, (p. 169), then the 1002 area would only supply the nation with the equivalent of 6½ months of oil. This is hardly a significant contribution to the nation's long-term oil needs nor to the national security.

Of the 1100 miles of arctic coastline in Alaska, it is only the 125 mile stretch within the Arctic National Wildlife Refuge which is currently closed to oil and gas development. With potential oil and gas reserve prospects along this entire coast, as well as off shore, it is irrational and untimely to open the Refuge area for leasing before all other potential oil prospects are explored and developed.

It is evident that the underlying rationale for the full leasing recommendation is not concern for the long-term national need for oil but, instead, for short-term economic gain. A sincere national commitment to maintain a supply of domestic oil for present and future generations would mandate the immediate enactment by Congress of a Comprehensive National Energy Conservation Policy. Implementation of such a policy today could, by the year 2000, save an amount of oil equivalent to the entire assumed recoverable oil potential of the 1002 area.

A decision to forego oil development on the Refuge coastal plain today would ensure a possible untapped oil reserve for the future. With "Wilderness Designation" of the 1002 area, future generations would receive a legacy of both an untapped oil reserve and the national treasure of a unique and intact arctic wilderness. Should it then become necessary to develop this potential oil reserve, future technological improvements may permit the extraction of oil and gas without the devastating impact to the environment which would occur today.

Moreover, the wilderness coastal area of the Refuge would provide a very valuable baseline study area from which environmental changes resulting from oil developments on other arctic areas could be measured. Mitigation measures could then be taken before there is irreparable damage to the arctic ecosystem.

SPECIFIC RECOMMENDATIONS

1. The final report needs to address the "land megatrade" issue. The Fish and Wildlife Service is actively negotiating the transfer of ownership of 1002 lands to Alaskan native corporations. After 1991, these lands would be available for private ownership including oil companies. Nevertheless, the physical, biological and socioeconomic assessment of the Draft Report is based upon the assumption that the 1002 lands would remain owned and managed by the Federal government (p. 98) These assessments in the Draft are invalid and should be redrafted if the 1002 refuge lands are not to be under Federal ownership and control. A full disclosure is required of the rationale and the extent of the land trades under negotiation.

2. It is incorrect to assume that the impact of oil development in the 1002 area would be similar to that of the Prudhoe Bay oil field. There are significant physical and biological differences between the two areas which will cause the adverse impact of oil development to be much greater in the 1002 area. Moreover, there have been serious problems in the Prudhoe Bay operation particularly with air, soil, and water pollution, and hazardous waste disposal, which have not yet been resolved.

3. The report needs to expand upon plans to secure the great quantity of water required for oil development before a meaningful assessment of the impact on wildlife can be made. There is not sufficient water supply to support wildlife as well as the oil development in the 1002 area. One of the specific purposes defined in ANILCA for the Arctic National Wildlife Refuge is to ensure water quality and necessary water quantity to conserve fish and wildlife populations and habitats in their natural diversity. Therefore, since wildlife must be given priority in the allocation of the limited water resource of the 1002 area, where is the source of water required for oil development?

4. The final report needs to expand upon plans for securing the large quantity of gravel required for oil development. The major sources of the limited gravel resource within the 1002 area are river and riparian areas. Removal of gravel from these special habitats would adverely impact fish, migratory birds, and musk ox and other mammals. Information of the location of potential gravel sources for oil development is needed in order to assess the extent of the adverse impact of gravel extraction upon wildlife.

5. The potential soil, water, and air pollution from oil development activities has not been adequately addressed. The cumulative impact of small discharges of pollutants introduced into the environment over the life of the oil field must be considered as well as the short-term accidental releases. Proposed stipulations for disposal of fuel, hazardous wastes, drilling muds, and other wastes are grossly inadequate to safely remove these pollutants from the Refuge environment (p. 147) There is no approved hazardous waste disposal site in Alaska. Reinjection of wastes into permafrost is not a safe option. Little is known how such wastes might alter the thermal balance of the permafrost, nor how such wastes may migrate through the permafrost.

6. The final report needs to address the cumulative effects upon the 1002 area of potential oil development along and off-shore of the entire arctic coast, particularly from Prudhoe Bay east to the Refuge boundary. Should the 1002 area be opened for leasing and development with construction of an oil pipeline link to Prudhoe Bay, oil development could be greatly accelerated off-shore and on adjacent state owned coastal lands west of the 1002 area. The Draft Report understates the extent of habitat destruction within the 1002 area since the required infrastructure would serve not only the 1002 oil fields, but would also provide support for oil development off-shore. It is wrong to assume that wildlife, such as caribou, muskox, polar bear, and migratory birds displaced by habitat destruction in the 1002 area, could find suitable habitat elsewhere in view of this potential development along the entire arctic coastal plain. There would be no "refuge" for displaced wildlife. An overview map and plans for potential oil development along the arctic coast should be included in the final report.

P-92

CONCLUSION

The 1002 area is an integral part of the Alaska National Wildlife Refuge established by Congress to protect unique arctic wildlife, wilderness and recreational values not duplicated in any other national park, refuge, or wilderness area. It is evident that the 1002 area cannot be opened to oil and gas leasing without permanent loss of these values to nation. The impact of oil development defies all the purposes for the Refuge defined by Congress in ANILCA. The findings of the Draft Report support the conclusion that on this particular coastal area, oil leasing and development and wildlife refuge are not compatible land uses. The choiceis clearly wildlife refuge or oil development; not both.

The Secretary's stated concern for national oil needs and his assurances of controlled development to minimize environmental impacts is outrageous considering that the Fish and Wildlife Service is actively engaged in negotiations to transfer the 1002 refuge lands out of Federal ownership. The recommendation to open the 1002 area to oil and gas leasing may achieve short-term economic and political ends. But the potential 6½ months supply of oil from the 1002 area would not significantly contribute to the oil needs of the nation.

Opening the Arctic National Wildlife Refuge to oil and gas leasing makes as much sense as would a proposal to melt down the Statue of Liberty for national security and for satisfying the national domestic need for a supply of copper.

There are alternative and more effective means of securing a long-term domestic supply of oil through a national commitment to oil and energy conservation.

"Wilderness Designation"for the 1002 area would in no way deplete the domestic oil reserves which may underlie the Refuge. This potential reserve would remain a source of oil for future generations when technological advances may allow oil and gas extraction without the inevitable and devastating impact on wildlife and the arctic ecosystem that would occur today.

"Wilderness Designation" for the 1002 Refuge area would leave the legacy to future Americans of both an untapped oil reserve and an unsurpassed unique arctic wilderness.

I urge the Secretary to reconsider his recommendation. In the long-term national interest in assuring domestic oil reserves for future Americans, and consistent with the purposes defined by Congress for the Arctic National Wildlife Range, I urge the Secretary to recommend that the 1002 coastal plain of the Refuge be designated "Wilderness".

Dorothy H. Thompson

Dorothy H. Thompson

Testimony Given at Kaktovik 1-6-87

First of all I would like to mention that from what I have read in the report. Arctic Village was not taken into consideration. The studies cover the immediate area of the coastal plain. It does not cover the full range of the Caribou migration route. Which, would all be affected if the herd are disturbed in at least one area.

The Caribous survival depends on their basic instinct of fear. Since the Arctic National Wildlife Refuge has always been a wilderness area. Any activities by man would have an enormous impact on their behavior. I think the studies are disturbing enough.

The people in my area especially the elders,primary diet is Caribou meat, also as far as obtaining the food, Caribou is more reliable than groceries. Simply because we understand the Caribou a lot better than your local supermarket. We can judge the quality and quantity of Caribou we need for any length of time. We can't do the same with groceries, since we are in remote area and the reliabilit of transportation is always questionable, also most groceries shipped into the village is at best one to two weeks old. Subsistence hunting and fishing is our only means of obtaining fresh food.

My people has a practice that has been handed down from generations that is the area of the killing must be cleaned after the animal has been butched and removed. This lessens the chance of the are being contaminated and diseases being spread by scavengers that comes into the killing area. This insures the continued existence of a healthy herd. There is no way that explorations and development will insure this.

Lastly, most studies refer to positive changes from subsistence to cash base economy. Usually, increase education, employment and health services. But there is never any mention of the negative changes like now, like icrease in drugs, alcohol, crimes and suicide rates.

I believe that if there is to be any kind of exploration or development considerations. There should also be alternatives, planned for all negative aspects of such activities. Since this is basically the last of our wilderness area nothing should be left to chance.

-next page-

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Last but not least, I do not think it makes good business sense to develope any more of our oil potential, while the oil market is unstabled, OPEC has already wasted enough of our oil dollars.

Thank-You

Lincoln Tritt
Lincoln Tritt P.O. Box 22003
Arctic Village, Alaska
99722

3 February 1987

U.S. Fish & Wildlife Service
Div. of Refuge Management Resources
2343 Main Interior Building
Washington, D.C. 20240

RE: Comments on Interior's Draft 1002 (ANWR) Report

Having lived in Alaska for the past twenty years--before, during, and after construction of the North Slope Haul Road and Trans-Alaska Pipeline--I have some serious concerns regarding oil and gas drilling activities on the ANWR coastal plain. Three aspects of the Draft 1002 Report particularly disturb me:

(1) The Economic/Geologic Analysis

Interior's recommendation that full leasing be permitted is not consistent with only a one-in-five probability that oil is present in economically recoverable amounts. Furthermore, considering that that estimate is based on an inflated oil price ($33 per barrel), we can assume that calculations using a more realistic price range ($14-$19 per barrel) would yield an even lower probability.

The estimates that the field most likely has only 600 million barrels total, but may have some six times as much, further argue against opening it to development. Even the larger quantity would not contribute significantly to the U.S. oil requirements at our present rate of consumption; the smaller is truly insignificant.

Both the geologic and economic analyses (a 95% probability of only 600 million barrels of oil; only a one-in-five chance of finding economically-recoverable oil at all) argue in favor of the NO ACTION or WILDERNESS DESIGNATION alternatives at this time.

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(2) Assumptions of Industry's Environmental Responsibility

Coastal plain development would cause, in my opinion, a level of environmental damage greater than that acknowledged in the Report.

The Report refers to the inevitability of oil spills. This prediction is consistent with my own observations on the North Slope. Even with best intent, these spills are never adequately cleaned up and the "ability of the industry to minimize damage" must be viewed skeptically.

Illegal hunting, feeding, and harrassment of animals (especially bears and wolves) within reach of roads and camps is a certainty which regulations to the contrary will not prevent. This is not adequately considered.

The oil industry, pleading it cannot afford to conform to toxic-waste regulations, is exempted from them. Drilling activity on the coastal plain will inevitably lead to water and soil contamination by toxic drilling muds, among other pollution sources. A serious problem anywhere, the risk is unacceptably high in the Arctic (because of slow decomposition rates), particularly when the health of the Porcupine Caribou Herd is at stake.

(3) Aesthetic Values

The Report's perspective is here utterly backwards. Both Alaska and the oil companies want to develop fields on the Arctic coast, recognizing that these fields may have some potential. But they have done so, and they can continue to do so, on fields west of ANWR. The 1002 lands, on the other hand, represent the only portion of the high Arctic coast in Alaska or Canada which we can preserve free from disturbance. I believe this opportunity is so important that it, alone, should have precluded recommendation of the full-leasing alternative.

alternative, to be the only responsible management options for the Arctic coastal plain at this time. These alternatives, while protecting an absolutely unique and valuable ecosystem, would leave ample coastal and off-shore lands open to development. Wilderness designation would also be consistent with the intent of Congress expressed in ANILCA and in subsequent votes in the U.S. House to designate the coastal plain as wilderness.

Sincerely,

June Weinstock
1339 6th Avenue
Fairbanks, AK 99701

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Jerry C. Wickstrom
1009 E. 26th Ave.
Anchorage, AK 99508

January 15, 1987

U. S. Fish & Wildlife Service
2343 Main Interior Bldg.
18th & C. Street N. W.
Washington D. C. 20240

ATTN: Division of Refuge Management

Ladies and Gentlemen:

Enclosed are my comments and recommendations with regard to resolving the issues of opening the Arctic National Wildlife Refuge to petroleum leasing and development. These comments are based on my review of the document and my professional experience as wildlife and fisheries biologist, land and resource planner and past program manager for BLM interagency leasing and environmental studies for the National Petroleum Reserve in Alaska (NPRA).

The best approach that Alaska can take to getting the refuge opened is to take a steady thoughtful approach, tone down divisive rhetoric, look at the long term and nationwide interests, manage the land carefully and plan for ultimate restoration of the area to as close to natural as feasible.

There is no doubt pure wilderness will be destroyed. We should admit that up front and offer to trade this area for inclusion of wilderness elsewhere. For example, part of NPRA - e.g. Teshekpuk, Utukok Upland, and Icy Cape have had little petroleum development interest and may be trade off potentials.

With regard to the caribou calving controversy, I suggest that a commitment to phase in of leasing, studies and inventory in advance and better communication of industry efforts and success in the Kuparuk are essential. There should however be immediate leasing in all of the area except area D since the issue of oil potential can only be resolved by drilling.

The Secretary of Interior's recommendation is sound. Legislation should include additional long term mitigation and management commitments from the beginning. The long term view needs to be expressed.

Sincerely,

Jerry C. Wickstrom

JCW/acr

cc: RDC
State of Alaska
USFW - Anchorage
BLM - Anchorage
Anchorage Board of Realtors

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REVIEW COMMENTS AND POLICY RECOMMENDATIONS

ARCTIC NATIONAL WILDLIFE REFUGE - DRAFT EIS

01/15/87

GENERAL COMMENTS

The report is an excellent example of EIS writing, editing, and illustration.

ISSUES

a. Congressional designation of a wildlife refuge put wildlife in the highest priority position, however, the decision to not place the coastal plain in wilderness must have been made due to oil and gas potential.

b. The issues are nearly identical to NPRA issues. The NPRA court suit over subsistence was decided by the 9th Circuit Court ruling that there had been compliance due to deletion of core calving areas and Teshekpuk Lake waterfowl area, and the subsistance and other stipulations.

c. Complex geology of the area requires drilling to define subsurface values. Fear and opposition to leasing on NPRA proved to be unfounded due to little or no exploration drilling and no development after leasing. Also, there was no interest in the 3rd lease sale.

d. The Kuparuk experience is the best technically documented experience regarding caribou calving. Prudhoe Bay area had no inventory in advance - Kuparuk is a good example of cooperative design development.

e. Alyeska Pipeline experience demonstrates that elevation of the pipeline works for pipeline passage of wildlife. Gravel crossings have not been used and thus are costly and unnecessary.

f. Habitat should be looked at in broad perspective, e.g. gravel pads, etc., do convert a minor percentage of one type of habitat - e.g. moist tundra, but may diversify habitat from a comprehensive standpoint by varying the habitat. Gravel, roads and pads - if not being used by humans probably attract a variety of species including caribou which may find insect relief or a dry resting area. They may however on an ecosystem standpoint introduce use pattern changes, e.g. predators having easier travel routes.

g. The worst case scenario would be for industry, after finding and developing a field, to find it uneconomic, e.g. Milne Point. In this case the wilderness would be destroyed or severely impacted and no benefits accrued. The best scenerio would be for a massive discovery which makes it all worthwhile.

CONCLUSION & RECOMMENDATION

The Secretary's recommendation of phased in leasing is the best approach. This could be improved and implemented by:

a. Institution of off season government or industry COST well exploratory drilling to define values in the trade off decisions regarding development of area D. The NPRA experience of government exploration was helpful.

b. Support for and passage of energy conservation legislation. In the best of discovery circumstances the nation's energy supply and balance of payments will not be corrected.

c. An oil import tax with proceeds to go directly to payment on the national debt. This would also provide government and industry a long term stable basis to make minimum bid, royalty rate and economic development decisions.

d. Lease stipulations including a requirement that roads, pads, airstrip and other physical activities which mar the wilderness, be designed at the beginning to facilitate rehabilitation at the end of field life, to small "w" wilderness or backcountry status. For example pads, excavation and pits should be rounded or lenticular in shape or easily reshaped to such rather than square cornered contemporary engineering designs.

e. Initial legislation stating the goal of restoration of the area to as close to natural as possible. This would include removal of all structures, obliteration, removal and cosmetic treatment of all physically disturbed areas including pits, berms, roads and pads. The road to the Dalton Highway should not become a permanent transportation link within the refuge, but could provide access to the western boundary. The gravel road, while largely rehabilitated, would form a hiking trail across the coastal plain. Pictures of the restoration and cleanup record on NPRA should be used to educate the national public.

f. Legislation establishing a jointly funded sinking or reserve fund to accomplish restoration. The Federal Government, State of Alaska and the oil companies should contribute a minor percentage of proceeds from sales, bonuses and net profits to an investment fund. If 100 years is the hypothetical end of operations, $1,000,000 set aside at 6% compounded annually for this period amounts to almost $340,000,000.

g. Halting land trades with the Native Corporations. These trades, although well intended, may prove to be a complex, particularly litigous impediment to expedited leasing. Rather than a land trade, I recommend a percentage of State of Federal income from the sale be committed to buy out critical inholdings in conservation areas, or fund other conservation needs.

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SPECIFIC COMMENTS

PAGE 72, TABLE III-4

How was the price of oil determined? What will be the likelihood of bids if the price of oil stays down? What will be the price per barrel to establish minimum bids? Are there any alternative approaches to leasing that should be considered - e.g. low minimum bid and sliding scale royalty?

While these factors are not usually a preliminary consideration they do become part of the decision process and thus should be explained.

Jerry C. Wickstrom
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RESUME

1956-59	South Dakota School of Mines - Geological Engineering
1959-62	South Dakota State University - BS - Wildlife Management
1962	Karluk Lake Kodiak Island - Bureau of Commercial Fisheries, Red Salmon Research
1962-65	Land Examiner Realty Specialist - BLM, Fairbanks
1965-68	Wildlife Biologist, Watershed & Range Specialist, District Safety Officer, Fire Control Duties - BLM, Fairbanks. * First Fisheries Inventory - Brooks Range, First BLM District Wildlife Biologist, First Fire Control - Soil Erosion Studies & Management Recommendations.
1968-73	Wildlife Biologist, Fisheries Biologist, Recreation and Land Planner Specialist, BLM - Winnemacca District, Nevada. * First Wildlife Biologist, First Fisheries Studies, First District Wide Land Plan, First Interagency Land Plan - BLM/USFWL, District Safety Officer & Defensive Driving Instructor.
1973-1977	Environmental Coordinator Alaska State Office - BLM * First Environmental Coordinator, Developed Statewide d-2 Alternative, d-2 EIS Writing & Review, Washington, D.C.
1977-1983	Asst. Chief and Chief NPRA - Alaska State Office, BLM, IO5-C Interagency Report - Leadership of 6 Agencies & State & Borough. * First on Shore Competitive Leasing Regulations, EIS & Program.
1983 -	Real Estate - Foreign Trade - Import/Export - Business Profession & Ownership. * Corporate President & Owner, Board of Realtors - Planning & Zoning Chairman, 1986, Vice Chairman, Anchorage Foreign Trade Zone Group - A Nonprofit Corporation.

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UNITED STATES COURT OF APPEALS

FOR THE NINTH CIRCUIT

SARAH KUNAKNANA, etc., et al., Plaintiffs-Appellants/ Cross-Appellees, vs. WILLIAM CLARK, etc., et al., Defendants-Appellees, and AMOCO PRODUCTION COMPANY, et al., Intervenor-Defendants/ Appellees/Cross-Appellants.	Nos. 83-4325 84-3623 Alaska (Anchorage) O R D E R

Before: ANDERSON, SKOPIL and POOLE, Circuit Judges.

The panel unanimously affirms the decision of the district court. An opinion will be filed and available within the next several days.

FILED

SEP 12 1984

PHILLIP B. WINBERRY
CLERK, U.S. COURT OF APPEALS

UNITED STATES COURT OF APPEALS

FOR THE NINTH CIRCUIT

SARAH KUNAKNANA and JEAN NUMNIK, Plaintiffs/Appellants, vs. WILLIAM CLARK, Secretary of the Interior, and THE UNITED STATES DEPARTMENT OF THE INTERIOR, Defendants/Appellees, and AMOCO PRODUCTION COMPANY; ARCO ALASKA, INC.; GETTY OIL COMPANY; SHELL OIL COMPANY; and TEXACO, INC., Intervenor-Defendants/Appellants.	No. 83-4325 D.C. No. A83-337 Civil O P I N I O N

Appeal from the United States District Court
for the District of Alaska
The Honorable James M. Fitzgerald, District Judge, Presiding
Argued and submitted May 16, 1984
Decided 9/10/84

Before: ANDERSON, SKOPIL, and POOLE, Circuit Judges.

J. BLAINE ANDERSON, Circuit Judge:

Sarah Kunaknana and Jean Numnik, two Inupiat Eskimos, appeal a district court judgment denying their challenge to certain oil and gas lease sales by the Bureau of Land Management within the Alaska National Petroleum Reserve. We affirm.

I. OVERVIEW

This appeal concerns oil and gas leasing on the National Petroleum Reserve-Alaska (NPR-A), a national petroleum reserve located on the North Slope in Alaska and encompassing 23 million acres. With certain exceptions, oil and gas production was prohibited within this reserve according to the terms of the Naval Petroleum Reserves Production Act of 1976 (NPRPA). 42 U.S.C. §§ 6501-6507. In 1980, Congress amended the NPRPA to provide for "an expeditious program of competitive leasing" in the NPR-A. Id. at § 6508.

Pursuant to this directive, an expedited leasing program was developed. The program involved five annual sales of approximately two million acres each. The Bureau of Land Management (BLM) published a Final Environmental Impact Statement (FEIS) concerning oil and gas leasing in the NPR-A and subsequently issued its Record of Decision. Lease Sale 831, challenged here, was the first offering under this scheme.

Appellants Numnik and Kunaknana and the City of Barrow, amicus here, sought a preliminary injunction blocking the lease sale. They noted that one of the primary objectives of the Alaska National Interest Lands Conservation Act (ANILCA), enacted just weeks before the NPRPA was amended, was "to provide the opportunity for rural residents

engaged in a subsistence way of life [the opportunity] to do so." 16 U.S.C. § 3101(c). They contended that the BLM had failed to make certain determinations required by the ANILCA after concluding the lease sale would result in a significant restriction of subsistence use by the native Alaskans. 16 U.S.C. § 3120.

A preliminary injunction issued on July 19, 1983, after the district court concluded that the BLM had failed to make the required findings. The court permitted opening and accepting of bids by the BLM but enjoined execution of leases pending an expedited trial on the merits. Such a trial was required by the NPRPA, 42 U.S.C. § 6508. Of the 81 tracts offered for lease in Sale 831, bids on 17 were accepted.

Trial on the merits commenced December 12, 1983, and the full administrative record was submitted to the court without objection. Counsel for the government announced that its position had changed since the preliminary injunction hearing. He asserted that a mistake had induced the government's initial position due to an assumption that the BLM had made a determination of significant restriction in subsistence use. Admittedly, such a conclusion would require further findings under 16 U.S.C. § 3120(a). At trial, counsel asserted that the BLM had, in fact, concluded just the opposite and offered a "Modified Record of Decision" to explain this determination.

The district court entered its decision, finding in favor of the government on the merits. The court enjoined execution of the leases, allowing appellants to file in this court for injunction pending appeal. An injunction pending appeal was entered on January 13, 1984, permitting lease issuance but enjoining any exploratory drilling or any other lease activity that would substantially and adversely affect subsistence use. This expedited appeal followed.

II. DISCUSSION

Appellants Kunaknana and Numnik contest the validity of the district court's review. They argue that the court considered impermissible materials, improperly limited discovery and erred in determining that the BLM's rule-making procedure complied with section 810 of the ANILCA. Intervenors Amoco Production Company, et al., cross-appeal, contending that Kunaknana and Numnik lack standing due to a failure to participate meaningfully in the administrative process preceding Lease Sale 831.

A. Standing

Traditionally, a party has standing to seek judicial review of agency action where the challenged action has caused "injury in fact" to an interest "arguably within the zone of interests to be protected or regulated by the statute" allegedly violated. State of California v. Block, 690 F.2d 753, 776 (9th Cir. 1982) (quoting Association of

Data Processing Service Organizations, Inc. v. Camp, 397 U.S. 150, 152 (1970)). Under this requirement, plaintiffs must show not only a "distinct and palpable" injury but also a "fairly traceable" causal connection between the claimed injury and the challenged conduct. Warth v. Seldin, 422 U.S. 490, 501 (1975).

We find that the traditional standing requirements have been met by appellants. The purpose of the ANILCA was to protect those North Slope natives who, like appellants, lead a subsistence lifestyle. 16 U.S.C. §§ 3111-3112. Oil and gas development within the area would directly affect the availability of the subsistence resources and limit those areas in which subsistence activities could be conducted.

We disagree with intervenor's claim that appellants should be deprived of standing due to a failure to participate meaningfully in the administrative process. See Vermont Yankee Power Corporation v. National Resources Defense Council, 435 U.S. 519 (1978). See also City and County of San Francisco v. United States, 615 F.2d 498 (9th Cir. 1980) and Seacoast Anti-Pollution League v. Nuclear Regulatory Commission, 598 F.2d 1221 (1st Cir. 1979). The rationale of Vermont Yankee has been applied in those instances in which an interested party suggests that certain factors be included in the agency analysis but later refuses the agency's request for assistance in exploring that party's

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contentions. Id. at 553-554. Such a party will not be permitted to challenge the agency decision on the ground that it failed to consider the necessary alternatives. Id. The district court declined to establish a broad rule which would require participation in agency proceedings as a condition precedent to seeking judicial review of an agency decision, and we affirm.

B. The Modified Record of Decision

Appellants take issue with the district court's inclusion of the Modified Record of Decision (MROD) as a part of the administrative record on review. Characterizing the MROD as an impermissible post hoc rationalization of an agency decision, made in response to litigation, appellants contend that consideration of the MROD was improper. See Citizens to Preserve Overton Park v. Volpe, 401 U.S. 402, 420 (1971); accord Camp v. Pitts, 411 U.S. 138, 142 (1973) (per curiam). We disagree.

Agency actions are reviewed by examining the administrative record at the time the agency made its decision. Overton Park, 401 U.S. at 419-420. Agency documents prepared during and in response to litigation are generally excluded from this review. Id.; accord ASARCO, Inc. v. U.S. Environmental Protection Agency, 616 F.2d 1153, 1158-61 (9th Cir. 1980).

The general rule prohibiting post hoc rationalizations is not without exceptions. In Overton Park, the

Supreme Court expressly authorized the trial court to allow the Secretary of Transportation to "prepare formal findings" in order to "provide an adequate explanation for his action" which the court could then review. 401 U.S. at 420. The Ninth Circuit has also addressed the scope of the district court's review of an agency decision, adopting the more "enlightened" approach which permits "explanation" of agency decision-making. ASARCO, 616 F.2d at 1159. In ASARCO, we held that "[a] satisfactory explanation of agency action is essential for adequate judicial review, because the focus of judicial review is . . . on whether the process employed by the agency to reach its decision took into consideration all the relevant factors." Id.; accord Overton Park, 401 U.S. at 402; Bunker Hill Co. v. Environmental Protection Agency, 572 F.2d 1286, 1289 (9th Cir. 1977). The court limited the purposes for which information outside the administrative record may be considered to use as "background information" and for "ascertaining whether the agency considered all the relevant factors or fully explicated its course of conduct or grounds of decision." ASARCO, 616 F.2d at 1160. Finally, the court observed that additional information should be explanatory in nature, rather than a new rationalization of the agency's decision, and must be sustained by the record. Id. at 1159-60.

In the instant matter, the district court noted that "without the [MROD], the record before this court will

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'not disclose the factors that the Director considered or [his] construction of the evidence.'" CR 111 (citing Overton Park, id. at 419-20). It appears that without benefit of the explanation of agency action set forth in the MROD, the trial court would be prevented from determining whether the agency action was within the scope of its authority. We find, therefore, that the inclusion of the MROD in the district court's review was both permissible and necessary.

C. Section 810 Compliance

The appellants argue that the Department of Interior failed to comply with Section 810 of the Alaska National Interest Lands Act of 1980 in holding Lease Sale 831. 16 U.S.C. § 3120. They contend that the department failed to accurately identify the section's requirements and consequently failed to fulfill those requirements. We disagree.

The Naval Petroleum Reserves Production Act of 1980 requires the Secretary of the Interior to implement "an expeditious program of competitive leasing of oil and gas in the National Petroleum Reserve in Alaska." 42 U.S.C. § 6508. The statute did not give the Secretary the discretion not to lease; instead, the Secretary was given the discretion to provide rules and regulations under which leasing would be conducted and was to develop restrictions

necessary to mitigate adverse impact on the NPR-A. Id. Expedited judicial review was an additional concern of this legislation. Id.

Shortly before the NPRPA legislation, Congress enacted the Alaska National Interest Lands Conservation Act. Its purpose was to preserve scenic Alaskan lands, to maintain wildlife species and undisturbed ecosystems and, as previously noted, to protect the interests of individuals engaged in subsistence lifestyles. 16 U.S.C. § 3101. In order to assure the continuation of subsistence lifestyles, Congress indicated that residents so engaged should play a part in the administrative structure. 16 U.S.C. § 3111. Section 810 of the ANILCA, 16 U.S.C. § 3120, provides the procedural mechanism which insures this local input into the administrative decision-making process.

Section 810, Public Law 96-487, 16 U.S.C. § 3120, provides in relevant part as follows:

> (a) In determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands under any provision of law authorizing such actions, the head of the Federal agency having primary jurisdiction over such lands or his designee shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes. No such withdrawal, reservation, lease, permit, or other use, occupancy or disposition of such lands which would significantly restrict subsistence uses shall be effected until the head of such Federal agency--

(1) gives notice to the appropriate State agency and the appropriate local committees and regional councils established pursuant to Section 805;

(2) gives notice of, and holds, a hearing in the vicinity of the area involved; and

(3) determines that (A) such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands, (B) the proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition, and (C) reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.

Agency interpretations of a statute are entitled to great deference and should be upheld so long as they are reasonable. Western Pioneer, Inc. v. United States, 709 F.2d 1331, 1335 (9th Cir. 1983); United States v. Boyden, 696 F.2d 685, 688 (9th Cir. 1983). "This traditional acquiescence in administrative expertise is particularly apt" when an agency "has played a pivotal role in 'setting [the statutory] machinery in motion.'" Ford Motor Credit Co. v. Milhollin, 444 U.S. 555, 566 (1980)(quoting Norwegian Nitrogen Products Co. v. United States, 288 U.S. 294, 315 (1933)). As we noted in Western Pioneer, 709 F.2d at 1335:

> Our task then, is not to interpret the statutes as we think best, but rather to inquire whether the [agency's] construction was "sufficiently reasonable" to be

> accepted. "To satisfy the standard it is not necessary for a court to find that the agency's construction was the only reasonable one or even the reading the court would have reached if the question initially had arisen in a judicial proceeding." [citations omitted.]

The plain terms of Section 810(a) require the director or his designee, here the BLM (agency), to "evaluate" three factors concerning the decision to issue oil and gas leases involved in the programmatic leasing sale. These factors include: (1) the effect of leases on subsistence uses and needs; (2) the availability of other lands for oil and gas leasing; and (3) other alternatives which would reduce or eliminate the amount of land taken away from subsistence uses. 16 U.S.C. § 3120(a). This provision must be read in light of section 6508 of the NPRPA which requires the agency to grant some oil and gas leases in the NRP-A. 42 U.S.C. § 6508. The only "other lands" and "other alternatives" that the agency could have considered without violating section 6508 would be other tracts within the NPR-A which could be leased for oil and gas.

As the district court observed, when the first sentence of section 810(a) is read in light of 42 U.S.C. § 6508, it requires the agency to evaluate the effects upon subsistence needs of leasing the particular tracts tentatively selected and to compare the relative desirability of leasing other tracts within the NPR-A. This leaves to the

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agency's discretion the particular details concerning when, where, and how leasing within the NPR-A shall occur.

A second provision of Section 810(a) requires the agency to hold public hearings and make specific findings concerning significant restrictions upon subsistence uses caused by federal decisions involving Alaskan public lands. 16 U.S.C. § 3120(a). The second sentence of this provision suggests that these procedures are necessary only if the agency first concludes that the contemplated action may significantly restrict subsistence uses. Id. To read the sentence otherwise would require that the agency follow these procedures any time it contemplated federal action concerning any public lands in Alaska and would completely ignore the phrase "which would significantly restrict subsistence uses." The inference to be drawn from this language is that Congress intended a two-step process: first, the agency determines whether the contemplated action may significantly restrict subsistence use; if it may, the agency must comply with the notice and hearing procedures. This construction of the statute is a reasonable one, relying on the plain meaning of the words of the statute.

Pursuant to this procedural scheme, the agency first defined "significant restriction" and then conducted an extended analysis of the "significance" of subsistence restrictions, as to both subsistence resources and user

access. MROD at 1, 5-25. This analysis allowed a finding of no significance only if there were "no" reductions or only "slight" reductions or disruption of resources or user access to those resources. MROD at 5-6. As a result of its analysis, the agency determined that neither the programmatic leasing program nor Lease Sale 831 would significantly restrict subsistence uses. Appellants argue that this decision was capricious and should be overruled. 5 U.S.C. § 706(2)(A).

> To make this finding the court must consider whether the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment. Although this inquiry into the facts is to be searching and careful, the ultimate standard of review is a narrow one. The court is not empowered to substitute its judgment for that of the agency.

Citizens to Preserve Overton Park v. Volpe, 401 U.S. at 146; Southeast Alaska Conservation Council v. Watson, 697 F.2d 1305, 1312 (9th Cir. 1983). Additionally, we must consider whether the agency articulated a rational connection between the facts found and the choice made. State of California v. Watt, 683 F.2d 1253 (9th Cir. 1982).

We find that the agency examined the relevant factors and did not error in its judgment. The district court's decision includes findings of fact which evidence an articulated rational connection between the facts found [by the agency] and the choice made. Id. See CR 111 (Decision of Record). The agency's decision-making process

included the cumulative impacts of both the entire expedited leasing program and Lease Sale 831. This is evidenced by the fact that the agency removed certain lands, such as Caribou calving areas and Black Brant molting areas, from potential leasing and included stipulations regarding subsistence use in the leases. The agency imposed these protective lease conditions and stipulations in order to preclude future restrictions on subsistence uses that might be caused by activity permitted by the NPR-A leasing program.

Appellants argue that the agency adopted an overly restrictive definition of the term "significant restriction upon subsistence uses." This term is not defined by Section 810(a); consequently, the agency has defined it as (1) a reduction in the availability of harvestable resources caused by decline in the population of subsistence resources; (2) a reduction in the availability of resources, caused by an alteration in their distribution or location throughout the NPR-A; and (3) the limitation of access for subsistence harvesters. Arguing that the term is analogous to the finding of "significant effect on the quality of the human environment" of the NEPA provisions, appellants urge adoption of a broader definition. They argue that a "restriction" is a much higher threshold than that required to trigger a NEPA procedural process and so should be prohibited.

We agree with the district court's finding that the agency definition of "significant restriction" is within the range of reasonable meanings which the words of the statute permit. Loma Linda University v. Schweiker, 705 F.2d 1123, 1126 (9th Cir. 1983). The term "restrict" may well be a higher threshold than that required by NEPA; however, we need not determine in this case whether the agency's general definition survives the arbitrary and capricious standard in all cases or whether it is not at a high enough threshold. We hold only on the record before us that the application of that definition to the proceedings here and the actual analysis that led to the decision reached was not arbitrary and capricious and that the proceedings undertaken sufficiently complied with the requirements of section 810. We note also that the BLM explicitly retained the right to impose additional restrictions, including mitigation requirements during the permitting process to protect subsistence resources. The definition is within the range of meanings which could be given and is consistent with the purposes of the legislation and we affirm. Id.

D. Restriction of Appellants' Case

Kunaknana and Numnik contend that the district court erred by unreasonably restricting the presentation of their case. Specifically, error is alleged in the district court's refusal to consider the affidavits of two of

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appellants' expert witnesses; limitation of discovery; and improper resolution of the MROD issue on summary judgment.

As noted earlier, trial court review of agency decision-making is generally limited to the existing administrative record. Overton Park, id. This record may be supplemented with testimony from the officials who participated in the decision explaining their action or by formal findings prepared by the agency explaining its decision. ASARCO, 616 F.2d at 1159-60. Outside information is admissible only for limited purposes. Id. at 1160-61. See Bunker Hill, 572 F.2d at 1292 (outside evidence admitted to furnish background information); see also Association of Pacific Fisheries v. Environmental Protection Agency, 615 F.2d 794, 811 (9th Cir. 1980) (outside evidence used to ascertain whether all relevant factors were considered). "[T]echnical testimony . . . elicited for the purpose of determining the scientific merit of the [agency's] decison," is not generally admissible. ASARCP, id. at 1161.

Our review leads us to conclude that the expert witness affidavits offered by appellants, CR 68, are the type of "technical testimony" prepared "for the purpose of contesting "the scientific merit" of the agency's analysis which we rejected in ASARCO. The district court's decision to exclude these documents on review is affirmed.

Appellants' contention that curtailment of discovery forced presentation of their case on an incomplete

record lacks merit. The order staying discovery permitted deposition of BLM officials Jerry Wickstrom and James Gilliam and did not limit the areas of inquiry. CR 67. In view of the statutory mandate to expedite, 42 U.S.C. § 6508, we do not find that the district court abused its discretion in foreclosing discovery and setting an abbreviated briefing schedule. O'Brien v. Sky Chefs, Inc., 670 F.2d 864, 869 (9th Cir. 1982).

Finally, Kunaknana and Numnik claim that the district court improperly resolved this matter on motion for summary judgment. We disagree. Our review reveals a trial by the court on December 12, 1983, followed by a resolution of the contested fact issues in a Decision of Record entered December 20, 1983. We find that the district court conducted the proper inquiry in the acceptable format.

III. CONCLUSION

For the foregoing reasons, we

AFFIRM.

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January 18, 1987

Dr. William D. Witherspoon
2897 Country Squire Lane
Decatur, Georgia 30033

Director, U.S. Fish and Wildlife Service
Division of Refuges
Room 2343 Main Interior Building
18th and C Sts., NW
Washington, DC 20240

Re: Draft Coastal Plain Resource Assessment, Arctic National Wildlife Refuge, Alaska

P-108

Dear Sirs:

I would like to take this opportunity to comment on the draft Arctic National Wildlife Refuge (ANWR), Alaska, Coastal Plain Resource Assessment. I understand the deadline for such comments is January 23, 1987.

I feel qualified to comment on geologic aspects of the report because of my previous work in this area. From December 1980 through March 1984, I worked as Research Geologist for one of the oil companies active in the area. My major responsibility was to provide regional geologic support for exploration in the ANWR and adjacent offshore. I met with some of the authors of the report in Menlo Park and I visited the Coastal Plain of ANWR in 1983 as part of a surface geology study team.

I respect both the geologists of U.S.G.S. and my former colleagues in the industry. However, I would be quite surprised if any of them would expect a decision-maker in industry to lease a tract or drill a well based on the depth and quality of the analysis presented in the report.

Yet, on such information, Congress is expected to end the area's status as the last protected Arctic coastline in the U.S.

As others have indicated, the executive summary seems to bias the report's results in favor of development. It quotes the prediction of "a 95-percent chance of the 1002 area containing more than 4.8 billion barrels of oil..." yet omits that this is supposed to be contingent on there being at least one commercial discovery, the chances of which are assessed as 19 percent. The summary also exaggerates the report's optimism by quoting estimates of oil in-place rather than economically recoverable oil.

But the summary is not the only problem. In my opinion, the precise-sounding figures themselves are <u>at best</u> seat-of-the pants estimates, and at worst an overly optimistic interpretation. Here are some key points in the report that trouble me:

1. For most of the area, only one seismic horizon has been mapped -- the "basement top" reflector (p.58). By not mapping the objective reservoir intervals, the authors avoid using the only data they have to determine whether reservoir intervals terminate on unconformities, disappear due to facies changes, or thin laterally. All of these factors are real possibilities in the area.

2. Likewise, by mapping only the top of basement, the authors tacitly assume that closure on their propects remains the same at the (higher) stratigraphic levels of the objective intervals. This is rarely the case in a fold and thrust belt: typically structures at higher levels are smaller due both to tighter fold geometries and interruption by steeper thrust faults. This increases my skepticism about the two exceptionally large structures in the northeast part of the 1002 area, 18 and 19 (Figure III-1), which undoubtedly contribute significantly to the optimistic sacle of the reserve estimates.

3. At the root of the first two problems is evidently lack of access by the authors to the sophisticated seismic processing available in the industry. The seismic data as shown in plate 5 is of poor quality. Combined with the only moderate grid spacing, this contributes to an overall lack of confidence in the map on which the reserve estimates depend so heavily.

4. According to the report, 50% of the estimated oil is contained in the "Folded Ellesmerian/Pre Missisippian" play (p. 68). Yet the report itself raises many doubts about the

continuity of these units into the study area. For example, Figure III-5 presents the interpretation that the most attractive reservoirs in this sequence (including the Prudhoe reservoir equivalents) are missing in the 1002 area due to erosion!

On the same page, the report states, "However, their northward extent [into the 1002 area from exposures in the mountains] depends on several factors, such as the rate of truncation on the unconformity, the amount of northward transport by thrust faulting, and the possible existence of downdropped fault blocks north of the truncation edge, about which we have little direct information....If most of the Ellesmerian rocks are missing in most of the 1002 area, the assessment number would be reduced considerably." (p. 66).

One could add that these strata if present could lack porosity due to their history of greater deformation and overburden than at Prudhoe Bay.

5. The report states that potential source rocks for the Ellesmerian play include fine-grained Ellesmerian rocks (believed to be gas-prone) and "possibly the Hue shale" (p.66). The doubt about the Hue is presumably because other rocks may intervene between it and any Ellesmerian reservoirs and because in any case "charge from above" is not generally considered a strong scenario. Since the Hue is the only potential source rock the report confirms to be oil-prone (p. 62), there is doubt that the Ellesmerian play could be oil-bearing.

My opinion is that the report does not contain enough depth for a geologist to responsibly conclude that "The area is clearly the most outstanding oil and gas frontier remaining in the United States" (Executive Summary, page 1). The report adds considerably to our earlier understanding of the area, but the overall impact on the attractiveness of the area is <u>negative</u> in my view, for at least two reasons.

First, the data confirms that the fold and thrust architecture as seen in the Brooks Range indeed characterizes the whole area. Notwithstanding encouraging results in areas such Idaho and Montana, thrust belts are among the most challenging of frontier areas. They present formidable obstacles to seismic processing and interpretation. They can be characterized by rapid and unexpected facies changes, often poor porosity, thermal regimes that tend to make them gas provinces, and small size and complex evolution of trapping structures.

Second, one of the properties of a successful province like Prudhoe Bay that one hopes will carry over into adjacent areas is the source rock. But the report appears to put hopes to rest that the pebble shale and older possible source rocks for Prudhoe could have generated oil in the 1002 area (page 62).

I understand and to some extent sympathize with the desire of my former colleagues in industry to meet the challenges of the ANWR and particularly to provide additional geologic control to assist current exploration efforts in the adjacent offshore.

However, I think it does the American people a disservice to represent the area as a sure-fire success and solution to future energy problems. The area is already in service to the public: let it remain as the last pristine Arctic coastline and a preserve for future generations.

Sincerely,

Bill Witherspoon

cc:

Hon. Pat Swindall
Hon. Lindsay Thomas
Hon. Sam Nunn
Hon. Wyche Fowler

February 3, 1987

TO: U.S. Fish and Wildlife Service
Attention: Division of Refuge Management Resources
2343 Main Interior Bldg.
18th and C Sts., N.W.
Washington, D.C. 20240

FROM: Virginia H. Wood
1819 Muskox Trail
Fairbanks, AK 99709

RE: Comments on Arctic National Wildlife Refuge Coastal Plain Resource Assessment

I wish to have the following comments inserted in the record.

First, let me state my bias openly and straightforwardly. I admit to having a strong emotional attachment for the Arctic National Wildlife Refuge; and I am strongly opposed to any legislation by Congress which would open up the coastal plain (the 1002 area) of this sanctuary to the oil industry for oil and gas leasing and development. This violates the very reason for which the Refuge was created by Congress in 1960--"to preserve the area's unique wildlife, wilderness and recreational values".

The Alaska National Interest Lands Conservation Act (ANILCA) added other purposes for the Refuge:

1. To conserve fish and wildlife populations and habitats in their natural diversity.
2. To fulfill international treaty obligations of the U.S. with respect to fish and wildlife and their habitats.
3. To provide opportunities for continued subsistence uses by local inhabitants.
4. To insure water quality and necessary quantity within the refuge.

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My first statement is influenced by having personally known the late Olaus Murie, the highly regarded pioneer of arctic biological research in Alaska, who first conceived of a preserve that would set aside a representative area of arctic Alaska large enough to preserve wildlife and habitat for posterity. He envisioned a preserve large enough to encompass a range of landscapes from the polar sea and tundra plains to the arctic alpine and the boreal forests.

I took part in the preliminary hearing held in Fairbanks, Alaska which eventually led to the establishment of the Arctic National Wildlife Range in 1960. For the past 11 years I have guided commercial backpacking and river rafting trips in various parts of the present Arctic National Wildlife Refuge. (I would like to interject here

that over half of my clients have been over 50 years old and a few have been over 70, most all of moderate means.)

Thus my comments are not just based on academic or doctrinaire opinion, but come from a close personal involvement in this land and its wildlife that are unique in the USA. I expected the Department of Interior to hold this Refuge in trust for me and future generations. I feel that this trust has been betrayed by the Secretary's recommendations.

I also challenge the Secretary's recommendations as stated in Chap. VIII of the Draft Assessment on the 1002 area because I believe that his assumptions equating Prudhoe Bay developments with those that would take place in the 1002 area are false; that they do not address the important potential impact of ancillary infrastructures that opening the entire area to oil drilling and production would require--including airfields, roads, more pipelines, waste disposal and construction and maintenance camps; that it does not deal with the fact that, contrary to the Prudhoe Bay site, the 1002 area is extremely lacking in the water and gravel resources necessary for construction and operation; and that the recommendations contradict the conclusions of the Department's own biologists in the report.

On Page 6 it is stated:

"Long term losses in fish and wildlife resources, subsistence uses, and wilderness values would be the inevitable consequence of a long term committment to oil and gas development, production and transportation...Oil and gas discovery will lead to industrial development. There will be pressure to use this area as a base to serve exploration and development on the continental shelf, or to intertie with projected oil and gas developments on the outer continental shelf.

Oil and gas development will result in widespread, long term changes in wildlife habitats, wilderness environments, and Native activities. Changes could include displacement and reduction in the size of the Porcupine caribou herd (presently estimated at 180,000 animals)...Geography apparently limits the availability of suitable alternate calving or insect relief habitats for the herd".

The Secretary's recommendation states that wildlife habitat impacts would be "mitigated", but there are no details on just how this could be done. (My suspicion is that mitigation would be waived if this put an economic burden on the oil companies.)

The assumption that the Prudhoe bay experience proves that oil drilling can take place on sensitive arctic habitat with little or no impact on wildlife or the environment is challenged by such highly-regarded biologists as Dr. David Klein of the University of Alaska, who has done extensive research on caribou in Alaska and Canada, as well as on the wild reindeer of Scandinavia. He has said,

"It's still an open question, but the Prudhoe Bay oil field is such a mass of pipelines, roads, and facilities,

without any good planning for caribou that the area appears largely lost to their use."

A news article in the Fairbanks Daily News Miner, dated Feb. 1, 1987, stated:

"The state Department of Environmental Conservation says oil and gas exploration and production produces hazardous wastes, but the industry has been exempted from federal and state laws governing its management and control."

The article goes on to cite specific instances of hazardous waste in the North Slope oil fields and the difficulties involved in dealing with it. Industry retaliated by saying that complying with regulations would be "economically devastating".

The alleged justification for opening the whole 1002 area for unlimited oil drilling and production in direct contradiction of the stated purposes for which the Refuge was established is that new oil fields are needed for "energy independence" and "national security".

The environmental risks this portends hardly seem worth the approximately 196 days worth of recoverable oil possible at optimistic estimates based on the report's own figures of the amount of daily use of oil predicted by the year 2005 divided into the amount of oil that might be recoverable.

Especially when oil lease auctions on Alaska state lands are attracting few bidders nowadays; when Arco and other oil companies are abandoning their present leases because oil glut prices do not justify paying the rent on them; and when oil companies in Alaska are closing down viable wells because oil revenues are too low. Also by administrative decree for some reason the oil reserves stored for emergency use are now kept at a low percentage of their capacity.

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Projected monetary returns from projected 1002 area wells, should they become a reality, are based on a price of oil at $33 per barrel, a price not predicted by economists during the next decade.

Keeping the 55 mph speed limit, implementing the compulsory energy efficient ratings on appliances, and mandating higher mileage per gallon ratings for new cars--all of them recommended for elimination by this administration--would save as much oil as the 1002 area dmay produce at the given odds.

Nor does "national security" seem a convincing reason to sacrifice the wilderness integrity of the coastal plain of the Arctic National Wildlife Refuge when there is also a strong push to sell Alaska oil to Japan; or when our major threat to national security appears to be a "mistake" that might start a nuclear war, and the terrorist bombings and taking of hostages--none of which can be deterred by Alaskan oil. I also recall that in our last "war" we were defeated by peasants on foot and bicycles while we had all the oil we could possibly use for our military machines.

It is rather an irony that opening up the 1002 area to full oil drilling and production would preclude me and my

clients from going anywhere near an oil field or using the infrastructure facilities, yet under the present status of the Refuge, or under wilderness status, we could rove at will.

There is tight secrecy and security at Prudhoe Bay. One is not allowed out of the terminal at Deadhorse Airport without a security clearance. This is not a national defense restriction. It is imposed by the oil companies. They also refuse to disclose drilling data that would help determine if the disposing of hazardous waste in dry wells in the arctic is feasible and safe.

The 125 mile coast of the Arctic National Wildlife Refuge is the only shoreline closed to oil drilling in the arctic. There are still vast areas open to oil exploration and development in other parts of the North Slope of Alaska, and elsewhere in the state. The oil that might be in the 1002 area of the Refuge will still be there when we have squandered the crude in other places and so will the caribou and wilderness. Let us then decide our priorities.

BOT ~~Although~~ I would prefer Alternative D - "no action", realizing that refuge status did not protect the 1002 area from a Secretary of Interior who chose to recommend that it be opened up for full leasing and oil development, I feel I must opt for Alternative E--wilderness designation--to give it adequate protection.

Signed Virginia H Wood

Virginia H. Wood
1819 Muskox Trail
Fairbanks, AK 99709

JAN. 17, 1987

MRS CYNTHIA WRIGHT
52 E. 6th St. #7
N.Y.C. N.Y. 10009

Noreen Clough,
Division of Refuge Management
Room 2343
U.S. Department of the Interior
18th and C Streets N.W.
Washington, DC 20240

Dear Ms Clough,

Please send me a copy of the report referred to in the Dept. of the Interior's news release of NOV 24 1986 concerning the "Interior Dep Seek(ing) Public Comments on DRAFT Report Regarding Oil and Gas Potential on ARTIC National WILDEife Refuge."

I have a copy of DRAFT
ARTIC NATIONAL WIL
REFUGE, ALASKA
COASTAL PLAIN RESO
ASSESSMENT

I read it and took issue with the following—

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I.) In "looking to the future," should we not anticipate the possibility/probability that our oil and gas consumption might cease to grow or even shrink as our technology improves ways of recycling spent fuels and petroleum products and using more available oil and gas alternatives?

II.) The "traditional oil producing areas of the western United States, Texas, the Gulf Coast and Mid-continent" where the report mentions "significant decline in reserves will occur," are currently working at a fraction of their capacity. It is impossible to anticipate therefore when these reserves will be "depleted," if ever.

III.) The report states "most adverse environmental effects would be minimized or eliminated through mitigation based on ... information ... acquired during the development of Prudhoe Bay ... and the Pipeline."

Exactly what are those lessons and how can they be carried out? We have all seen pictures of the tundra (an extremely fragile fau

with takes 30 to 80 years to gro
one inch deep) destroyed in 100
acre swatches as bored tractor
drivers wrote their names and
messages with their machines—
It is impossible to prevent
accidents as well, an oil spill
could exterminate endanger whale
species, etc etc.

Again, one must conclude it is
impossible to accept such a statem
at face value or to assume it
would actually be possible to pre
"unnecessary adverse effects" from
occuring.

What standard can be use for what
is necessary and what unnecessary

IV "Industrial development could profou
affect the Native culture."

Could? Can there be any doubt that
it would? Can there be any doubt tha
employing natives of the Kaktovik tribe,
threatening to any slight degree thei
hunting grounds will destroy their
culture?

V The 20 polar bear dens, 108 brow
bears and 476 muskoxen are

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hardly numbers which can afford
any threat without looking
elimination in the face. Elimination in
one refuge area does not mean
extinction necessarily. Of the 108 speci
of birds that would be adversely
affected, (again, how not?) several ar
already on endangered specie lists.

To conclude, I found the tone of this
report to be slanted. The subtext
seems to be, "Let's Do It! Let's Go For i
and that conclusion did not, in my
estimation, come from an assessment
of available data, knowledge, and thou

It seems to me to come from a penchan
for 'developing new frontiers,' and does
not include concepts of conservation and
recycling resources already in use —
Also a "new frontier" in a sense.

A sense of the "Why climb the moun
Because it's there."
Well clearly the oil is there, but I
would not like to see my countrymen
"get it" just "because it's there".

I thank you for your time and remain,

Sincerely,

Mrs. Cynthia Wright

P.S.

I hesitated to mention this at first, but I must! As a resident of New York City I am of course accutely aware that contracts are to awarded should this legislation pass.

Should the land in question be designated as wilderness as I would hope to happen, perhaps "contractors" could be persuaded to develop industries based more on the ~~recycling~~ recycling of spent gases and reuse of petroleum products!

CW

P-114

1031 S. Scoville Ave.
Oak Park, IL 60304
14 Jan.'87

U.S. Fish and Wildlife Service (USFWS)
Attn: Division of Refuge Management
U.S. Department of the Interior (USDI)
2343 Main Interior Bldg.
18th and C Sts., NW
Washington, DC 20240

Dear Persons:

Subj: Comments on Draft Coastal Plain Resource Assessment
Arctic National Wildlife Refuge, Alaska (ANWR).

This letter constitutes my comments on your draft coastal plain resource assessment for the ANWR dated November 1986 and prepared under your program in response to §1002 of the Alaska National Interest Lands Conservation Act (ANILCA). I cannot emphasize too strongly my believe that the public interest in this matter can only be well-served by designation of the entire ANWR (including, most emphatically, the critical coastal habitat of the §1002 area) as wilderness (i.e., selection of your "Alternative E" as identified on pages 141-142 of the draft assessment).

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Regrettably, I must take issue with the contention in the draft assessment that the USDI's proposal to lease the entire §1002 area for oil and gas exploration and development rests on any analysis of the facts of the matter [p. 1]. The word analysis implies reasoned examination. To the contrary, it has been evident from the beginning that the USDI had a strong precommitment to oil exploration and development anywhere, at anytime, and at any cost to the public. Unfortunately, such precommitment is consistent with the historical way in which the USDI has operated as well as the policy of President Reagan's Administration. It preceeded any research or information gathering activities actually conducted in carrying out §1002 of the ANILCA. Indeed, it colored how the USDI has gone about conducting its research and managing the ANWR during the past six years.

I was present in Kaktovik and the ANWR during part of the time the USDI was carrying out its §1002 program in the first four years after passage of the ANILCA. From interactions with USDI officials, it was quite clear what was taking place and that the decision to condone full leasing for any oil exploration and development desired by the oil industry had already been made. This was obvious at the first scoping meetings in Kaktovik when USDI officials refused to provide interested citizens with requested information or answers to highly pertinent questions and it has been equally obvious to the present time when it has taken legal action to make this comment period possible. It was also obvious when the USDI facilitated the "land swap" that allowed Chevron to drill on the coastal plain and approved the use of tracked vehicles for surface seismic work when less damaging technology that could obtain the same information was readily available. Both of these actions can be interpreted as frustrating the expressed will of Congress.

A careful reading of the draft assessment makes it clear that the facts as presented in it support selection of "Alternative E". I do not believe that any other conclusion can be drawn from an analysis of the information presented in it as a whole if the public interest is uppermost in your mind. The physical [pp. 15-23] and biological [pp. 15-38] environment of the ANWR is without parallel in the United States and the traditional values of the Inuit eskimo people living in the area are dependent on its maintenance (other Native peoples in Alaska and Canada are also dependent on migrating animals that utilize the §1002 habitat). These are clearly threatened by any oil exploration and development activities. Such activites are simply incompatible. Furthermore, there is no guarantee that any commercially recoverable oil even exists in the ANWR. USDI is willing to jeopardize the ANWR and the animals and people who depend on it for a 19.0% "marginal probability" of finding any "economically recoverable oil somewhere in the 1002 area" [p. 72]. Even if oil was found, it would literally be a drop in the bucket that would only marginally extend a failed policy. The real answer is to shift to sustainable and environmentally compatible alternative energy programs rather than attempting to delay the inevitable and degrading the environment in the process.

At least at some times in the past the USFWS took its professional and legal responsibilities more seriously than it apparently does now. Recognizing the potential for adverse effects that proposed energy development activities in the same area of the ANWR posed at that time (i.e., the arctic gas pipeline), the USFWS issued a position paper in which it was pointed out that such development was fundamentally "incompatible with the basic values of the Range" in 1977 and that the USFWS should oppose it because it had a "legal responsibility to preserve the (ANWR's) integrity". As stated in that position paper (copies of this two page position paper and L.A. Greenwalt's one page cover memo of 21 Jun.'77 are attached to these comments):

> "The U.S. Fish and Wildlife Service is opposed to the proposed gas piepline routing across the Arctic National Wildlife Range or, alternatively, along its northern or western borders. We do not believe that the long-term National interest would be served by committing this unique area to development for short-term benefit when its outstanding values for wildlife and wilderness would be forever lost. To protect our public trust and to exemplify our good conscience as concerned ecologists, we must object strongly to any development which would threaten the integrity of the Arctic National Wildlife Range (emphasis added)."

As noted in the draft assessment [pp. 45-46]:

> "The Arctic Refuge is the only conservation system unit that protects in an undisturbed condition, a complete spectrum of the various arctic ecosystems in North America (emphasis added)."

> "Most of the major wildlife species occurring on the refuge (caribou, moose, brown bears, wolverines, wolves, muskoxen, polar bears, and numerous species of birds) use 1002 area habitats for all or part of their life cycles (calving, nesting, breeding, staging). The 1002 area is the most biologically productive part of the Arctic Refuge for wildlife and is the center of wildlife activity on the refuge. Caribou migrating to and from the 1002 area and the postcalving caribou aggregation offer an unparalleled spectacle."

Some of the admissions regarding expected adverse impacts on species which depend on coastal habitat in the §1002 area of the ANWR that appear in the draft assessment are summarized below for emphasis:

1. There would be a major change in distribution of both that portion of the central arctic caribou heard using the §1002 area and the Porcupine caribou herd. The sum of loss of calving habitat, barriers to free movement, disturbance, stress, and "other factors" would "cumulatively" reduce both available habitat and habitat values on remaining aras and "could result in a major population decline and change in distribution of 20-40 percent" [p. 112]. The §1002 area provides critical habitat for the Porcupine caribou herd, estimated to consist of as many as 180,000 animals [p. 105]. This risk alone should be enough to swing the decision against any further oil exploration and development activities in the ANWR. It is unacceptable.

2. It is predicted that "Major negative effects upon the muskoxen population" could also occur from oil development, on the order of "a change in distribution or decline affecting 25-50 percent of the population" [p. 114].

3. Although "only a few polar bears" might be excluded from their traditional denning areas, it is acknowledged that this "would be a moderate impact" because biologists "believe that the Beaufort Sea population can sustain litte, if any, increase in mortality" without a significant population decline [p. 118].

4. Although the cumulative effects of direct and indirect habitat loss, disturbance, and direct mortality might only result in "a reduction in the Banks Island population (of snow geese) or change in distribution of an average of 5-10 percent" a reduction in snow geese annual staging in the §1002 area "by almost 50 percent" could occur [p. 122].

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5. According to the draft assessment, a number of other adverse impacts are likely on various mammal, bird, and fish populations in the §1002 area but, with the exception of possible "moderate" declines in the golden eagle population it is hoped that the adverse impacts will either be "minor" or can be reduced to "minor" levels through mitigating measures [pp. 105-126]. In this regard, it should be remembered that reliance upon mitigating measures is not always found to be justified and that the cumulative impact of a series of "minor" impacts may be highly significant.

The people living in Kaktovik value the natural resources of the ANWR very highly and their traditional lifestyle is dependent on them. What does the USDI propose for them? As acknowledged in the draft assessment, they are likely to suffer cumulative adverse effects through "reduced availability of subsistence resources", "disruption of traditional subsistence use sites, and likely psychological effects" which, as a whole, are classified as "a major adverse effect" [pp. 126-129]. The people of the north slope (including Kaktovik) have already suffered substantial disruption as a result of other oil exploration and development activities. This disruption has been accompanied by increases in alcohol and drug abuse. We cannot in good conscience allow more such disruption. If we do, what this says about our values is self-damning.

I have lived and worked part-time in Kaktovik and the ANWR for eight years. I am an engineer whose profession is environmental protection. It is my firm believe that we cannot afford to risk the ANWR. If you give the "green light" to oil exploration and development in the §1002 area damage will occur. The only question

would then become precisely how much damage. For example, is the Porcupine caribou herd to be reduced by 20 or 40 percent (or somewhere in between)? Human systems (both engineered and regulatory ones) are imperfect. Even under the best of circumstances with well-intentioned people, you can expect equipment to fail and regulatory systems not to accomplish their assigned tasks. Such problems tend to occur more frequently in the arctic than in more temperate climates. The widespread environmental noncompliance that took place during construction of the trans-Alaska oil pipeline system is a classic example. We know of a number of significant, adverse environmental impacts that occurred during that project (e.g., fish kills from large oil spills and sedimentation) and the full impact of it is as of yet unknown. The ANWR is too precious to allow it to be damaged for any reason let alone one that may be a "pipe dream" pushed by people who place personal greed about the public interest. It should be remembered that once upon a time there was an infrastructure pushing for exploration and development of the "tremendous" oil reserves believed to exist in what was then called National Petroleum Reserve No. 4 (NPR-4), on Alaska's north slope (e.g., Senator Jackson of Washington, who no doubt received his information from the oil industry and Alaska commercial interests, once opined that there were 100 billion barrels of oil waiting to be tapped in NPR-4). After spending something on the order of one-billion dollars of public money to drill deep, dry holes we seem to have laid that fantasy to rest.

I strongly urge that the USDI change its position and recommend wilderness designation for the §1002 area. The entire ANWR should be protected to the highest level possible and such incompatible uses as oil exploration and development should not be allowed there. Your consideration of these comments would be appreciated, but it would be even more appreicated if the USDI would take them to heart and act accordingly. I also request that you provide me with copies of the final assessment, the required response to comments, and the final decision in this matter.

Sincerely,

G.M. Zemansky, Ph.D.

Attachment

cc: Selected Members of Illinois Congressional Delegation

OPTIONAL FORM NO. 10
JULY 1973 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

TO : Service Directorate

DATE: JUN 21 1977

FROM : Director

SUBJECT: U. S. Fish and Wildlife Service Position on Proposed Arctic Gas Pipeline Across the Arctic National Wildlife Range, Alaska

As you may know, the President is to make a determination of the need for, and possible routing of, a natural gas pipeline system from the Prudhoe Bay area of Alaska to the contiguous United States. This decision is to be made by September 1, 1977, unless the President utilizes the option provided by the Congress, which would permit a delay in issuance of the decision for up to 90 days after September 1.

This decision will be a difficult one, with many sensitive factors to be considered. One of the more controversial routes proposes to cross the Arctic National Wildlife Range with a 48 inch pipeline that would transport the gas, via the Mackenzie-Delta and Valley, through Canada, to the Midwestern States for ultimate delivery both east and west of the Rocky Mountains.

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The Service has developed a clear position on this pipeline route, as indicated in the attached statement.

You or your staffs may be asked about the view the Service takes, and the general interest in this subject may generate press inquiries of your offices. The position taken, that of opposing the crossing of the Arctic Range by a gas pipeline, is based upon the fact that such a crossing is clearly not compatible with the basic purpose of the Arctic Range and, therefore, must be opposed by the Service.

This position statement will be used to portray the Fish and Wildlife Service's position on this subject, and should be your source document for dealing with inquiries and in making your own responses to questions about the issue. For additional information, if needed, you may contact Burkett Neely, Division of Refuges, Washington, D. C. (Telephone No. 202-343-4047). Mr. Neely is the FWS's coordinator for this project.

Lynn A. Greenwalt

Attachment

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STATEMENT OF POSITION OF THE
U. S. FISH AND WILDLIFE SERVICE ON THE MATTER
OF A GAS PIPELINE ROUTE FROM PRUDHOE BAY, ALASKA

To date, no cooperative land-use plan among State, Federal, and Native land owners has been established for the Arctic slope of Alaska. In its absence, the history of development in this region has been one of commitment to National defense and the petroleum industry. As a result much of this area has been degraded to varying degrees, most prominently by thousands of miles of seismic trails laid out in checkerboard patterns across the tundra, and by airstrips, drilling pads, access roads, oilwells, and discarded equipment scattered across the coastal plain. More degradation will ensue with increasing exploration activities on the National Petroleum Reserve.

Between the Canadian border and east of the Canning River lies the Arctic National Wildlife Range, managed by the U.S. Fish and Wildlife Service with the paramount objective of perpetuating the wildlife and preserving the delicate Arctic wilderness habitat. The natural conditions within the Arctic National Wildlife Range, with but few exceptions, have been preserved as the single remnant of the vast Arctic slope of Alaska free of exploration and development. The Arctic National Wildlife Range is the last unspoiled area of its kind in the entire Northern Hemisphere. It is a biologically continuum of essentially unaltered arctic and subarctic habitats, from the arctic lowlands and foothills, across the Brooks Range, and onto the forested northern plateau.

Establishment of the Range resulted from wide-ranging support from noted conservationists, scientists, and many others, who more than two decades ago recognized its intrinsic value for wildlife and wilderness. The establishing order declares the purpose of the Arctic National Wildlife Range to be the preservation of unique wildlife, wilderness, and recreational values. A gas pipeline through or immediately skirting the Range and the probable ensuing development are clearly contrary to the mandated purpose of this order. Such activity would destroy wilderness values and irretrievably disrupt many wildlife populations and their habitats.

All the Range's fish and wildlife, including the polar bear, muskox, Dall sheep, barrenground grizzly bear, and peregrine falcon, is vital to the natural interplay of ecological forces. Of particular concern is the welfare of the Porcupine caribou herd, a major international resource which is vulnerable over a vast area because of its migratory behavior. Experience with the Arctic, Forty-mile, and Nelchina caribou herds, and with herds in Siberia, show human disturbances and/or developments on the traditional

range of caribou to be a principal factor disrupting the population dynamics of this species. The ultimate consequence has been a decline in herd size. A gas pipeline through the Arctic National Wildlife Range would cross the herd's traditional calving grounds in Alaska as well as the Yukon Territory.

The Dempster Highway, scheduled for completion in 1977, crosses the herd's crucial wintering grounds. The combined impacts from these developments and the logical extension of activities from them would undoubtedly cause a major reduction in the size of the Porcupine caribou herd.

The U. S. Fish and Wildlife Service is opposed to the proposed gas pipeline routing across the Arctic National Wildlife Range or, alternatively, along its northern or western borders. We do not believe that the long-term National interest would be served by committing this unique area to development for short-term benefit when its outstanding values for wildlife and wilderness would be forever lost. To protect our public trust and to exemplify our good conscience as concerned ecologists, we must object strongly to any development which would threaten the integrity of the Arctic National Wildlife Range.

Since there are alternative routes available to transport Prudhoe Bay gas to market, the U.S. Fish and Wildlife Service opposes the Arctic Gas Pipeline route in that it is incompatible with the basic values of the Range. It is our legal responsibility to preserve the integrity of the Arctic National Wildlife Range.