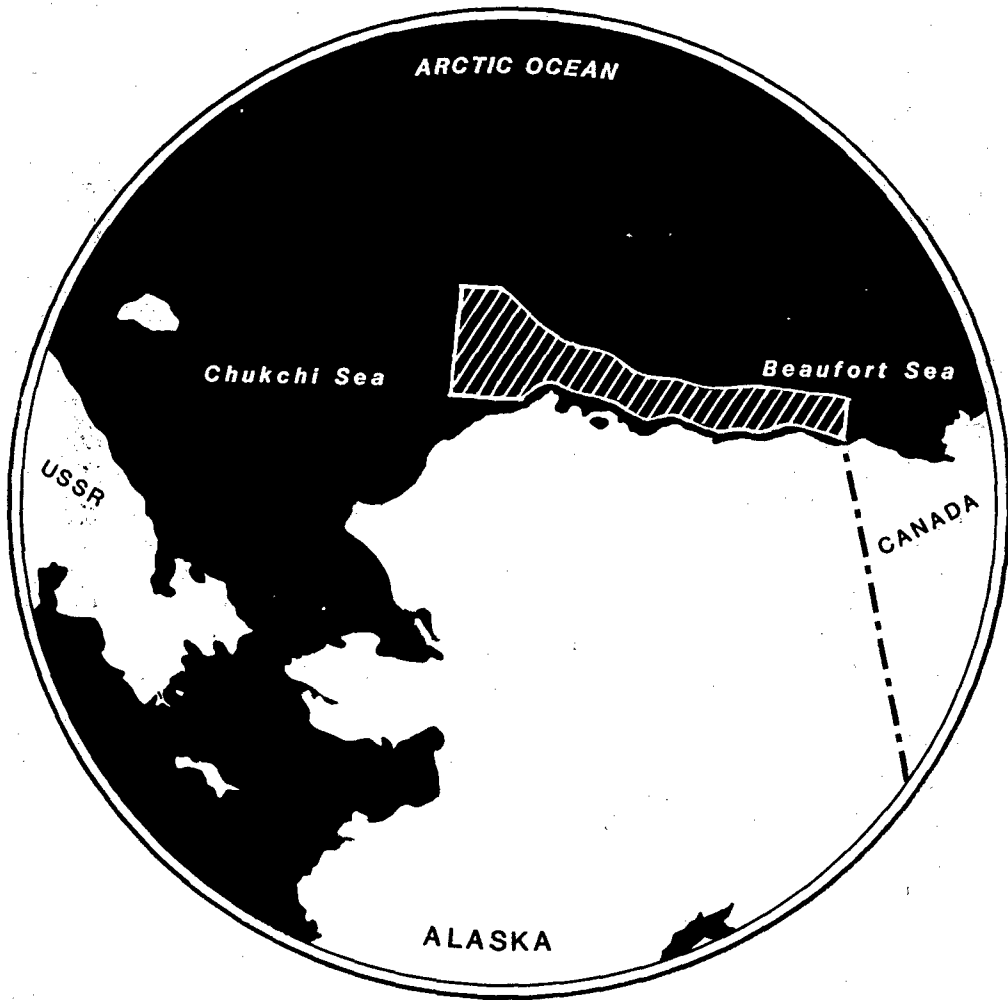


Beaufort Sea Sale 97

Final Environmental Impact Statement

Volume II



U.S. Department of the Interior
Minerals Management Service
Alaska OCS Region

MMS

Alaska Outer Continental Shelf

Beaufort Sea Sale 97

Final Environmental
Impact Statement

Volume II

June 1987

U.S. Department of the Interior
Minerals Management Service
Alaska OCS Region

Proposed Beaufort Sea Lease Sale 97
Final Environmental Impact Statement
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Acronym Glossary

V

REVIEW

AND

ANALYSIS

OF

COMMENTS

RECEIVED

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V. REVIEW AND ANALYSIS OF COMMENTS RECEIVED

A. Introduction

During the DEIS comment period, written comments and oral testimonies were provided by various governmental agencies, petroleum companies and related associations, environmental organizations, and individuals. A total of 22 letters of comment were received; 6 were from Federal agencies, 1 from the State of Alaska, 2 from local governments, 9 from petroleum companies and 2 from related associations, 1 letter signed by 9 environmental organizations and 1 from a private development organization. Public hearings were held in Anchorage and the North Slope Borough communities of Barrow, Kaktovik, Nuiqsut, and Wainwright. A total of 46 testimonies were presented at these hearings: 11 in Anchorage, 12 in Barrow, 6 in Kaktovik, 7 in Nuiqsut, and 10 in Wainwright. Testimony was received from 18 individuals, 14 from local government agencies, 1 from the Yukon Territory government, 3 from the AEW, 5 from environmental organizations, and 5 from petroleum companies and related associations.

Most of the comments on the DEIS addressed concerns regarding (1) deferral alternatives, (2) mitigating measures, (3) subsistence (regional and community effects), (4) effects on the biological resources of the sale and adjacent areas, (5) oil spills and oil-spill-cleanup technology, (6) adequacy of environmental information, and (7) effects on air and water quality.

All of the written and oral comments on the Sale 97 DEIS were reviewed, and responses were prepared for approximately 475 comments. Where comments warranted changes or presented new, substantive information, the text of the EIS was revised accordingly; reference to the revised sections is made in the responses to the specific comments.

The following substantial changes were made to the text:

- (1) the leasing history section was revised to reflect the current status of Federal and State of Alaska oil and gas leases in the Beaufort Sea;
- (2) the exploration scenario was revised to reflect a reduction in the number of exploration wells expected to be drilled as a result of Sale 97;
- (3) the development and production scenario was revised to allow for a longer period of time, about 12 to 13 years, between the lease sale and the start of production;
- (4) information on the fishes of the Beaufort Sea that became available after publication of the DEIS was added to the description of fishes in Section III.B.2;
- (5) additional information was added to the description of community subsistence patterns in Section III.C.3.b;
- (6) the description of the water quality, Section III.D.5, was expanded;

- (7) additional information on the potential effects of petroleum exploitation on subsistence-harvest patterns was added to Section IV.B.9.a; and
- (8) the effects of oil spills on water quality were revised.

B. Letters, Comments, and Responses

The following section presents a reproduction of all letters received during the DEIS comment period. Specific comments in each letter are bracketed and numbered. The MMS responses to the specific comments follow each letter.

Letter
Number

Commenter

Federal Agencies

Executive Branch--Departments

- 1 Department of the Interior
- 2 Bureau of Indian Affairs
- 3 Fish and Wildlife Service
- 4 Geological Survey
- 5 Department of State
- 6 Bureau of Oceans and International Environmental and Scientific Affairs

Independent Establishments

- 5 Environmental Protection Agency

Boards, Committees, and Commissions

- 6 Marine Mammal Commission

State and Local Governments

- 7 State of Alaska
- 8 Office of the Governor
- 9 North Slope Borough
- 10 City of Nuiqsut

Petroleum Companies and Related Associations

- 10 Alaska Oil and Gas Association
- 11 Amoco Production Company
- 12 ARCO Oil and Gas Company
- 13 Chevron U.S.A. Inc.
- 14 Exxon Company, U.S.A.
- 15 Marathon Oil Company
- 16 National Ocean Industries Association (No responses required)
- 17 Shell Western E & P Inc.
- 18 Standard Alaska Production Company
- 19 Texaco USA
- 20 Union Oil Company of California

Environmental Groups

21

Greenpeace U.S.A.

Other Signatories

Alaska Center for the Environment

Alaska Friends of the Earth

Alaska Wildlife Alliance

American Wildlife Alliance

Northern Alaska Environmental Center

Sierra Club

The Wilderness Society

Trustees for Alaska

22

Private Development Organization

Resource Development Council for Alaska, Inc.

(No responses required)

memorandum 1.

BUREAU OF INDIAN AFFAIRS
JUNEAU AREA OFFICE

DATE: December 10, 1986

REPLY TO: Area Director, Juneau Area

SUBJECT: Draft Environmental Impact Statement for the Proposed 1988 Outer Continental Shelf Sale 97 in the Beaufort Sea

TO: Regional Director, Minerals Management Service, Alaska Region

The Bureau of Indian Affairs has reviewed the DEIS for sale 97 and would like to offer the following comments.

The comprehensive document provides a vast amount of detailed information, so much in fact that organization could be improved to enhance tracking the issues through the range of alternatives. We suggest that certain key elements of the DEIS be given bold type, either moved to the center of the page or extreme left-hand margin and given adequate spacing to highlight these. For example, the heading on Table II-C-1, page IV-B-26 "3. Effects on Marine and Coastal Birds" is hidden between (5) Conclusions and a. Effects of the Proposal.

1-1

The same is true of marine mammals, etc., on IV-B-34 and caribou on IV-B-36. Since these resources are of very high interest and were associated with the primary issue, they should be highlighted better within the organization of the document.

It may be helpful to include the table of contents for each section at the start of each section to save the reader of constantly having to refer to this in the first 10 pages.

In the summary, it should be stated the proposed lease sale would add another oil and gas sale to a list of over 20 oil and gas development projects now planned or ongoing on the North Slope. It should also be stated how long lease sale 97 would be in effect, i.e., 1988 - 1998 or whatever is correct.

1-2

The tables and maps were very professional and helpful in understanding the proposal Table IV-A-7 and graphics 3, 4, 5, and 6 are among the finest examples.

In considering the alternatives evaluated and the proposal for alternative I, the Bureau recommends that an alternative combining alternatives IV and V with the Barrow and Kaktovik deferral areas be considered.

This recommendation by the Bureau is based on:

1-3

- (A) The probability of oil spills.
- (B) Potential effects to subsistence resources and uses that could be avoided in deferral areas, especially around Barrow and Kaktovik.
- (C) Subsistence harvest patterns are more apt to be affected in implementation of the proposed alternative.

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DEC 15 1986

RECEIVED DIRECTOR, ALASKA OCS
MINERALS MANAGEMENT SERVICE
ANCHORAGE, ALASKA
CSA JUNEAU 0188

Regional Director
Minerals Management Service
Page Two
December 10, 1986

(D) Cancellation, delay and deferral options can reduce environmental effects; however, the preferred alternative excludes all these options.

(E) Potential for permanent disruption of harvest of bowhead whales resulting in irreversible or irretrievable loss to Inupiat cultural and social values is greatest in the proposed alternative (see page IV-K-1).

(F) The Barrow and Kaktovik deferrals were supported by nearly all pertinent parties during scoping.

(G) 67% of all public testimony was subsistence related (see Table III-C-3).

The conclusions for Effects on Subsistence Harvest Patterns (page IV-E-8) and (IV-F-7) are based on a region-wide analysis and do not acknowledge potential severe localized effects on subsistence uses. This conclusion is contradictory to the information given on IV-L-9 where it is stated there may be a significant restriction of subsistence uses for the communities. For this reason, we do not concur with Table IV-L-5.

1-4

The Bureau recognizes the magnitude and difficulty in producing such a comprehensive document and commends Minerals Management Service for the information presented.

Thank you for the opportunity to evaluate and comment on this document.

for
Jake Lestenkof

Response 1-1

The format used in this EIS is the same standardized format used in past Alaska OCS Region EIS's. To assist the reader, an inclusive table of contents (TOC) has been included at the beginning of each major section; and, because of the variety of information presented in the EIS, the document has been divided into many subsections, as noted in each section's TOC.

Response 1-2

The suggested additions to the summary have been considered but are not deemed necessary because the information is already summarized in Tables IV-A-7 and II-A-1.

Response 1-3

The Secretary of the Interior has the option of deferring from the Sale 97 proposal area any or all of the deferral areas analyzed in the FEIS or areas proposed after consultation with the Governor of Alaska, pursuant to Section 19 the OCSLA, as amended,

Response 1-4

Effects on subsistence local harvests are of the utmost importance and, wherever possible, this analysis focuses on local effects. For example, this EIS finds that a MAJOR subsistence effect is expected at Wainwright. This finding is based primarily on the possible effects to local subsistence harvests of a pipeline landfall at Point Belcher. The Point Belcher area is only a small part of Wainwright's entire subsistence-use area, but it is an important part of it. MMS acknowledges the concern regarding potential severe localized effects on subsistence uses. It is not too hard to focus on local subsistence effects when the causal agent can be placed in a specific locale. However, such a focus is more difficult when, for example, one considers noise and traffic disturbances associated with exploration units; since this EIS is for a lease sale, exploration plans have not yet been developed. In the case of noise, as in the case of oil spills, predictive tools such as the scenario and the OSRA analysis are used to make the discussion of subsistence effects as locally specific as possible.

A summary of the potential effects that petroleum exploitation might have on the subsistence-harvest patterns of Barrow-Atkasuk, Kaktovik, Nuiqsut, and Wainwright has been added to the conclusions for each of the deferral alternatives: Sections IV.E.9, F.9, and G.9. The addition of the community-specific effects acknowledges the potential effects petroleum exploration and development and production might have on local subsistence uses. Equal consideration is given to all communities in the analysis of subsistence-harvest patterns. Sections IV.B.9(2) and (3) have been amended to include more discussion of local effects on subsistence uses in each community.



IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE

FAIRBANKS FISH AND WILDLIFE ENHANCEMENT OFFICE
ECOLOGICAL SERVICES/ENDANGERED SPECIES BRANCH
Room 222, Federal Building, Box 20
101 12th Avenue
Fairbanks, Alaska 99701-6267
January 5, 1987

Regional Director, Alaska OCS Region
Minerals Management Service
Attention: Dick Roberts
949 East 36th Avenue, Room 110
Anchorage, Alaska 99508-4302

Re: Beaufort Sea Sale 97 DEIS

Dear Mr. Roberts:

We have reviewed the draft Environmental Impact Statement (DEIS) for the Beaufort Sea Lease Sale 97, proposed for January 1988. In general, we found the information presented to be comprehensive, well prepared, and thorough. However, we noted a few significant deficiencies, which are outlined in the following comments.

A major problem with the Sale 97 DEIS is the size of the geographical area covered in one assessment. The result is that the significance of potential severe environmental impacts on a local level is diluted by being considered in the context of broad regional evaluations. One way this problem surfaces is shown in the summary of effects for the proposal and deferral alternatives (Table S-1). This summary shows little significant difference in expected impacts between the various deferral alternatives and the proposal alternative (in fact the effects of the Kaktovik deferral are shown as being identical to the proposal), even though the deferral areas were clearly selected to offer protection to certain biological and subsistence resources. This causes some doubt as to whether the method and criteria used for assessing degree of impact are adequate, or whether a sufficient range of alternatives was examined.

We are very concerned about the predicted MAJOR cumulative impacts to fish in all alternatives, MODERATE impacts to marine and coastal birds in all alternatives, MODERATE cumulative impacts to Bowhead and Gray whales in all alternatives, MODERATE cumulative impacts to caribou in all alternatives, MAJOR cumulative impacts to North Slope sociocultural systems and subsistence in all alternatives, and MODERATE cumulative impacts to water quality in all alternatives.

Since Alternative II (no sale) has been omitted from Table S-1, there is no indication of whether the cumulative effects, which appear to be identical for all alternatives, would also be the same under the "no sale" alternative. For example, are cumulative effects on fish expected to be major, regardless of whether this sale is held?

In the "Description of the Affected Environment", we are particularly concerned by the very minimal attention to marine and coastal birds. The discussion is superficial and overly generalized, with over 150 species and thousands of individuals included in generic statements about "birds". The only species mentioned by name are in paragraph 1 on p. III-23. The four species listed here could be considered the most common in marine habitats, except that red-necked phalaropes are more common than red phalaropes in the eastern Beaufort area. However, it should be emphasized that many additional species that are more common in coastal wetlands could be potentially affected by this lease sale. At least the more common and the more sensitive of these other species should be addressed specifically in the discussion; the reviewer should be informed of the more common species (of ducks, geese, and swans) which are being referred to by the general statements about "waterfowl", and the more common species (of sandpipers, plovers, and phalaropes) which are being referred to by the general statements about "shorebirds". Some important species groups, such as loons and passerines, are totally absent from this discussion. The incorporation by reference of the information in the Sale 87 FEIS does not greatly improve the discussion, since that information is outdated and also extremely generalized.

It would be appropriate to identify unique species having limited localized breeding distributions, such as the snow goose colony on Howe Island and the yellow-billed loon nesting population in the Colville delta. The importance of the Teshekpuk Lake area to molting brant and other waterfowl is also worthy of attention.

The oil spill risk analysis indicates that the chance for an oil spill of 1,000 bbl or greater to occur and contact land within 10 days is almost a certainty (77% during open water season and 90% during winter; Table IV-A-5). Yet the potential effects of oil spills on marine and coastal birds are judged to be only MODERATE, because "the death of several thousand oldsquaw... or other abundant species would not have major regional effects on regional populations of those species, because natural recruitment within abundant species populations such as oldsquaw would probably replace such losses in one or two generations"(p. IV-B-28 first para.). We believe the emphasis on oldsquaw as a basis to assess severity of oil spill impacts to be inappropriate. While this species is by far the most abundant marine bird species in the Beaufort Sea and is widely distributed, conclusions drawn about oil spill effects on oldsquaw are not necessarily applicable to other species, some of which have much more limited populations and distributions, or more critical or narrow habitat requirements that would render them more vulnerable to oil spill effects.

2-2

2-3

2-4

2-5

2-1

Although "bird species with low regional populations... are not likely to suffer high mortality due to an oil spill in the Beaufort Sea" (p. IV-B-31), the fact that fewer birds would be killed would not necessarily mean that the impact would be insignificant. For example, the Howe Island snow goose colony consists of only 40-50 nesting pairs; however, loss of these birds would eliminate the only nesting colony in the U.S. Likewise, an oil spill contacting a single barrier island (Cross, Pole, Egg, or Thetis) could eliminate 20-30% of the season's production of common eiders for the region. Also, an oil spill contacting a shoreline when birds are concentrated there during fall migration has the potential for affecting much more than a localized population of birds, since the entire arctic population of some species may pass through an area within a period of a few days or weeks. For these reasons, we believe that there is potential for MAJOR impact to some species of birds from the Sale 97 lease offering.

2-6

Another major deficiency in the Sale 97 DEIS is in the treatment of onshore impacts. Figure IV-1 shows the hypothetical offshore transportation routes used in the effects assessment, but we can find no figure illustrating the proposed onshore transportation routes. It would be appropriate to include such a figure in the EIS. While we find the treatment of potential offshore effects of development of this lease sale to be fairly thorough, the discussions of onshore effects appear somewhat incomplete. For example, the potential effects of a network of pipelines and roads running east-west across the entire North Slope coastal plain on caribou herds could certainly be more than MINOR, since portions of the migration routes of all four major arctic herds would be affected. Conclusions drawn from studies of the Trans-Alaska Pipeline (TAP) and Prudhoe Bay may not be applicable to other areas and other herds on the North Slope. Likewise, depending on the routing of these roads and pipelines, the direct and indirect effects on migratory birds and fish and their habitats could be significant. We also wonder if it is realistic to assume that such a road network would remain permanently closed to public access.

2-7

2-8

The assumption that the infrastructure at Prudhoe Bay will be used to support major construction and operation activities for the development, production, and transportation of crude oil across the entire North Slope seems very speculative and even somewhat unrealistic. The impacts associated with support camps and gravel sources necessary for the construction of several hundred kilometers of onshore pipeline and associated roads and other support facilities do not appear to be addressed in the DEIS.

2-9

The Sale 97 DEIS does not address potential impacts on the Arctic National Wildlife Refuge; the issue is avoided by showing undersea pipelines from the eastern sale area coming ashore at Bullen Point. However, we can assume that if the ANWR coastal plain is opened for oil and gas development, any offshore development would logically tie into the onshore infrastructure. This probability, and the potential cumulative environmental effects, should be fully addressed in the Sale 97 EIS.

2-10

We are pleased to see that MMS has acknowledged that the "obvious transportation scheme" includes transportation by offshore subsea pipelines (p. IV-A-3, para. 3); however, before this assumption is used in the effects assessment there should be some assurance of industry willingness to use subsea pipelines rather than solid-fill causeways. To date, industry has shown considerably greater interest in construction of causeways than subsea pipelines. Given the major effects of causeways on the nearshore physical regime and fish migration, as summarized on p. IV-B-24, it would seem appropriate for MMS to enforce their preference for subsea pipelines by including a statement in Stipulation No. 5 (p. II-19) prohibiting the construction of causeways and requiring the use of subsea pipelines for any offshore development resulting from this lease sale.

2-11

In conclusion, we suggest that the Sale 97 EIS should include an alternative which would incorporate all three of the proposed deferral areas, and that this should be the preferred alternative. We believe the proposed deferrals would significantly reduce the major potential impacts associated with this lease sale offering, particularly impacts to whale migration and feeding areas, impacts to the seabird feeding area near Barrow, and impacts on subsistence activities and communities. These deferrals would also greatly reduce the potential onshore impacts by reducing the potential road/pipeline network from 550 km traversing the entire arctic coastal plain, to about 70 km. The Kaktovik deferral would also minimize the vulnerability of the ANWR shorelines (and associated fish and wildlife species) to the risk from the predicted oil spills from offshore wells and subsea pipelines.

2-12

The Chukchi Sea deferral should more appropriately be addressed in a separate lease sale and EIS. The Sale 97 DEIS focuses heavily on the resources and impacts in the Beaufort Sea area, and does not adequately address the significant differences of the Chukchi area. Also, the potential effects of the major onshore construction activity associated with the pipeline that would be required for development of the Chukchi area is not adequately addressed in this DEIS.

2-13

We have the following additional specific comments:

p. II-20: ITL No. 1

It should be noted that North Slope weather frequently prevents total compliance with flight altitude limitations suggested in this ITL due to over-riding safety considerations. Thus it is unlikely that the level of aircraft disturbance would be reduced to NEGLIGIBLE by this ITL.

2-14

p. II-22: ITL No. 2

We suggest that the Colville River delta be included in the list of areas of special biological sensitivity, because of its importance to nesting and staging waterfowl, to anadromous fish, and to subsistence uses. Also, we would suggest including Cross, Pole,

2-15

Egg, and Thetis Islands, as these four islands support 70% of the common eiders nesting on barrier islands between the Colville and Canning Rivers (USFWS data).

Additional ITL's

We suggest that it would be appropriate to inform potential lessees of the land status of the Arctic National Wildlife Refuge which is adjacent to part of this lease sale area. A portion of the ANWR coastal plain (west of the Aichilik River) is currently designated as Wilderness. There is the potential that the remainder of the ANWR coastal plain could be designated as Wilderness, depending on the outcome of the decision by Congress on the 1002 area. If so, lessees should be aware that such designation would preclude any construction of onshore facilities in this area to support offshore development.

2-16

There is also potential that the 1002 area will be opened to oil and gas leasing by Congressional action. In this case, lessees should be aware that onshore support facilities would be subject to stipulations developed in conjunction with the 1002 actions. (See pp. 145-147 of the draft ANWR Coastal Plain Resource Assessment, report to Congress (USDI 1986) for proposed stipulations for the 1002 area.)

p.III-14

Locations of benthic macrophyte communities other than the Stefansson Sound Boulder Patch are not identified. The extreme scarcity as well as the high productivity of benthic macrophyte communities in the Beaufort Sea warrants their thorough investigation, delineation, and protection, even though none may be as extensive as the Boulder Patch of Stefansson Sound.

2-17

p. III-23: para. 3, sentence 2; para. 5, last sentence:

The Canning River delta should be included in these lists of important bird nesting and fall concentration areas.

2-18

Graphic 3

It is unclear why tundra swan concentration areas are only shown for the Arctic National Wildlife Refuge. The highest nesting densities of tundra swans on the North Slope are found in the Colville River delta. Relatively high densities of nesting swans are also found in the Prudhoe Bay area (between Colville and Sag Rivers), the Smith Bay area, and around Dease Inlet. Also, because of the high nesting densities of many bird species on the Canning River delta, it should probably be shown as a "high sensitivity area".

2-19

Graphic 4

More recent data on polar bear denning habitat for the North Slope should be available that could be included on this map. (See attached map of polar bear denning areas on ANWR.)

2-20

Graphic 5

Since most of the "summer movement" arrows point away from the coast, this map does not indicate the importance of coastal areas as

2-21

insect relief habitat for caribou. It is stated on p. III-31, para. 3, that "during the post-calving period in July and August, caribou generally attain their highest degree of aggregation ... cow/calf groups are most sensitive to human disturbance during this period." Thus it would seem appropriate to show these post-calving aggregation areas, in addition to the calving areas, on graphic 5.

Graphic 6

This map is inaccurate, and should be updated to reflect the current State of Alaska 5-year plan for proposed lease sales. Specifically, Beaufort Sea (52) is now scheduled for 1989; North Slope Foothills (57) is now scheduled for 1990; and Icy Cape (53), Offshore Icy Cape (58), Point Franklin (60), and White Hills (61) have been eliminated from the current 5-year leasing schedule. Also, the Prudhoe Bay Uplands (51) lease area is not as shown on the map, as only the northern half is currently being offered.

2-22

p. IV-B-2 and B-3

The discussion of potential oil spill effects on macrophytes focuses on the probability of an oil spill contacting the Boulder Patch of Stefansson Sound, and does not consider the probability of contacting other known kelp communities.

2-23

p.IV-B-32: para. 5

The loss of "thousands or tens of thousands of birds... as a result of oil spills over the life of these projects" might not result in a significant decline in the oldsquaw population, but could result in MAJOR impacts to other species. Other species besides those mentioned which would be likely to suffer high mortality rates from an oil spill would be: Pacific, red-throated, and yellow-billed loons (which feed in coastal lagoons throughout the breeding season); glaucous gulls and arctic terns (which nest on barrier islands); Ross' gull (during fall migration at Pt. Barrow); red and red-necked phalaropes, dunlin, and sanderling (most common shorebird migrants on barrier islands in August and September); and other species of eiders and scoters (which are included in the term "sea ducks").

2-24

p. IV-B-65: para. 3

We believe that considerably more than 10 km of pipeline would be needed to connect Bullen Point to TAP, since the distance is at least 50 km. Please clarify.

2-25

p. IV-B-65 and 66

Please clarify the discrepancy between the total amounts of onshore pipeline indicated in these paragraphs, with the total given in Table II-A-1:

a) Bullen Pt. to TAP: 10 km (correct to 50 km, see above)

b) Oliktok Pt. to TAP: 20 km

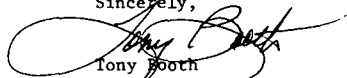
c) Pt. Belcher to TAP: 480 km (Pt. Belcher to NPRA: 140km)

Total: 550 km

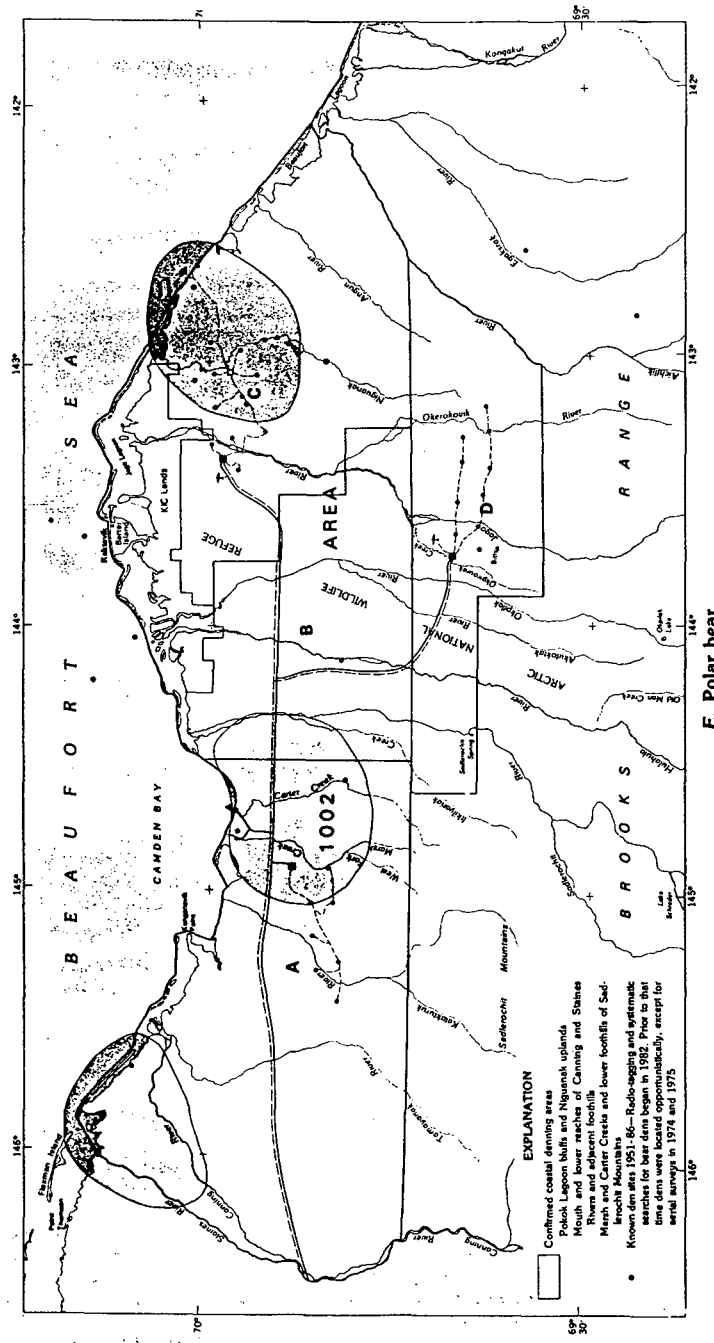
Total given in Table II-A-1: 160 km for Sale 97 (360 km total for Beaufort Sea).

2-26

We appreciate the opportunity to comment on the DEIS for the OCS Sale 97 Lease Sale. If you have any questions regarding these comments, please contact Kate Moitoret at 456-0209.

Sincerely,

 Tony Booth
 Acting Field Supervisor

- cc: Chief, ES, FWS, Washington, D.C.
 BEC, FWS, Washington, D.C.
 Glenn Ellison, Refuge Manager, ANWR, Fairbanks,
 Ann Rappoport, USFWS, Anchorage
 Ron Morris, NMFS, Anchorage
 Rich Sumner, EPA, Anchorage
 Jim Siedl, MMS, Anchorage
 John Warren, DO&G, Anchorage
 Warren Matumeak, NSB, Barrow
 Jan Sorice, DGC, Fairbanks
 Al Ott, ADF&G, Fairbanks
 Paul Bateman, ADEC, Fairbanks
 Larry Dietrick, N. Slope Dist. Office, ADEC, Fairbanks
 Rick Smith, ADLWM, Fairbanks



Response 2-1

The FEIS for Sale 97 has been written to address the possible environmental effects from oil exploration and development and production that may occur anywhere in an area covering approximately 21.2 million acres. Because the location of potential petroleum reservoirs and hence the exploration and development and production facilities and activities are unknown, the effects of the proposed lease sale are evaluated for an area selected by the Secretary of the Interior for further study and environmental analysis, Section I.A.4, and for adjacent areas that might be affected by activities associated with the proposed sale. Also, the effects at specific locations are more appropriately addressed when exploration and development and production plans are submitted in accordance with 30 CFR 250.34 for public comment and MMS approval.

A previous FEIS, for Sale 87, analyzed the potential effects on the biological resources, sociocultural systems, and physical regimes from possible petroleum-exploitation activities in a proposed lease-sale area covering approximately 17.2 million acres; Sale 87 was the third OCS oil and gas lease sale in the Beaufort Sea (formerly Diapir Field) Planning Area.

The specific effects on the biological resources, sociocultural systems, and physical regimes of removing each of the deferral areas from the Sale 97 area are not discounted; they are analyzed in Sections IV.E, F, and G. Although some of the effects of the lease sale may be reduced in those areas within and adjacent to the deferral areas, the regional effects may not change because (1) the differences in the petroleum-resource estimates for each of the alternatives are not great enough to change the hypothetical scenario conditions and (2) the definitions assumed in effects assessment, Table S-2, are rather general.

The analyses of the potential effects for the proposal and for each of the deferral alternatives are based on hypothetical conditions as described in the exploration and development and production scenarios for the proposal, Sections II.A.1 through 4, and for the deferral alternatives, Section II.A.6. These conditions are, in turn, based on the mean-case petroleum-resource estimates for the proposed sale area (Table II-A-1 and Appendix G--Table G-2) and for each deferral alternative (Table II-A-2 and Appendix G--Tables G-5, 6, and 7). Each alternative sale-area configuration is formed by deleting a deferral area from the proposed Sale 97 area.

These deferral areas are selected on the basis of information obtained during the scoping process, Section I.A.5, and not on potential petroleum resources. Estimates of the petroleum resources for each of the deletion alternatives are obtained after the deferral areas have been determined; and, until exploration and delineation wells are drilled, these resource estimates remain very speculative.

If the differences in the petroleum estimates for the proposal and each of the deferral alternatives are not great enough to significantly change the hypothetical scenario conditions, then the overall effects of petroleum exploitation on an entire regional resource, system, or regime are expected to be about the same, at least as interpreted by the definitions assumed for effects

assessment--Table S-2. Tables II-C-1 and S-1 are summaries of the most likely regional effects on the biological resources, sociocultural systems, or physical regimes for the proposal and each of the deferral alternatives.

Response 2-2

Table S-1 is a summary of the effects for those alternatives that provide for some variation in the size of the area offered for leasing and, potentially, in the amount of oil estimated to be present; these are Alternatives I, IV, V, and VI. If there is no lease sale, any environmental effects would be associated with other activities that, as noted in Table IV-A-7, are considered in Section IV.C, No Lease Sale Alternative, and in the cumulative-effects assessment.

Response 2-3

The description of marine and coastal birds in Section III.B.2 discusses and lists those species of birds most common in the sale area whose populations could be affected by the proposed action. Other key sensitive species such as snow geese and Pacific brant that may be affected primarily by other oil-development projects are discussed in the cumulative analysis and were listed in the 87 FEIS, which was summarized and incorporated by reference. Other common and abundant species of seabirds, waterfowl, and shorebirds--including northern (red-necked) phalarope--that occur along the coast of the Sale 97 area are listed and discussed in the Sale 87 FEIS, which was incorporated by reference. Some species groups such as loons and passerines are absent from the Section III.B.2 discussion because these species' populations are very unlikely to be affected by the proposed action. The Sale 87 FEIS description of marine and coastal birds along the coast of the Beaufort Sea and on the Arctic coastal plain is not outdated; the bird species populations described in the Sale 87 EIS and the information on distribution of these species in the planning area has not changed since the Sale 87 FEIS was published.

Response 2-4

The Howe Island snow goose colony represents a minor snow goose colony rather than a unique population; the majority of the snow geese nest on Banks Island and Wrangel Island. Bird colonies including the Howe Island colony have been identified on Graphic 3. Teshekpuk Lake and the Colville Delta were identified in the text as very important nesting habitats for waterfowl. The importance of these two areas to Pacific brant and the yellow-billed loon has been added to the text, Section III.3.

Response 2-5

With reference to Tables IV-A-5 and IV-A-6, the 77-percent and 90-percent probabilities that one or more oil spills would occur and contact land within 10 days are for the cumulative case--they are not for the proposal alone, which has a 23-percent and 32-percent chance of such contact. Because oldsquaw are by far the most abundant species in the nearshore environment, they are the species that could suffer the highest losses due to an oil spill. Although other species, such as loons, could contact a potential oil spill and

die, very few individuals of such species would be involved because of their low abundance in the marine environment. The consequent losses would be insignificant to the populations.

Also, the text in Section IV.B.3.a(1)(b) has been revised in partial response to this comment.

Response 2-6

Bird species with low local subpopulations such as the commenter's example--snow geese--are likely to suffer insignificant loss due to an oil spill. The snow geese of Howe Island are not a discrete population; they interbreed with the Banks Island population in Canada and the Soviet population on Wrangel Island. Thus, recruitment from these areas can replace lost snow geese within one generation, and the population effect would be MINOR. Additionally, snow geese do not frequent the marine environment but rather use the tundra habitats and saltmarshes, where they are far less likely to come in contact with oil. The chance of oil spills contacting coastal habitats near Howe Island is less than 10 percent. Thus, snow geese would not be expected to suffer any population-level effect (MODERATE or MAJOR) from the proposal alone.

Species with low or limited regional populations such as the yellow-billed loon are very likely to suffer the loss of no more than a few individual birds as a result of oil spills associated with the proposal. Such an effect probably would be insignificant to the population. If an oil spill contacted Thetis, Cross, Pole, or Egg Islands, the effect on common eiders would not represent 20 to 30 percent of the season's production of common eiders for the region because the majority of the common eiders nest on the mainland--only a small portion of the regional population nests on the barrier islands. An oil spill associated with the proposal is likely to contact only one lagoon system along the coast, not to contact the entire fall-migration population of any waterfowl or shorebird species; see Section IV.B.3(1)(b).

Response 2-7

The hypothetical offshore- and onshore-pipeline routes are discussed in Section II.A.4. The hypothetical onshore-pipeline routes across the southern part of NPR-A are shown in Graphic 6 and Oliktok Point in Appendix B, Figure B-2.

Response 2-8

The potential effects on caribou of a cumulative network of pipelines and roads across the North Slope is considered in the analysis of cumulative effects, Section IV.B.6.b. The conclusion is that cumulative roads and pipelines could have MODERATE effects on caribou-herd distribution. The analysis of the proposal and the cumulative analysis considers the fact that roads associated with potential development might be open to the public and that this public access could lead to overharvest of the caribou herds. Information on the effects of TAP and Prudhoe Bay development on caribou is the best information available for assessing the effects of development on other caribou herds. There is no evidence to indicate that effects on other herds would be different.

Response 2-9

The scenarios for oil exploration, development and production, and transportation are speculative. They are based on an estimated level of activities and scheduling of events associated with an estimated resource. Prudhoe Bay is the only place along the Alaskan Beaufort Sea coast that has port facilities and a road connecting it to other highways in Alaska, and it is located about midway along the Alaskan Beaufort Sea coast. Additionally, equipment and supplies can be hauled to the Beaufort Sea on marine vessels that can anchor at or near offshore or onshore construction sites. Given these conditions, it seems reasonable, at least for the present, to assume that Prudhoe Bay will be used to support major construction and operation activities that might occur as a result of Sale 97.

The general potential effects on tundra-habitat alteration and destruction that might result from onshore-construction activities associated with Sale 97 oil exploitation are in Sections IV.B.3 a(4) and (5) and IV.B.3.b(3) and (4) for birds and Sections IV.B.6.b(2) and (3) for caribou. Because the locations of both onshore and offshore facilities are unknown, site-specific information regarding possible affected terrestrial areas are more appropriately addressed in those environmental documents that might be required for onshore projects.

Response 2-10

As noted in Section I.B.1.b, laws, regulations, and orders that provide mitigation are considered part of the proposal. Under ANILCA, production of oil and gas from ANWR is prohibited and no leasing or other development leading to production of oil and gas from the range shall be undertaken until authorized by an Act of Congress; this prohibition is noted in Table IV-A-7. Because of this prohibition, it was assumed that any oil produced from Federal offshore leases north of ANWR would be transported via a marine pipeline at least as far as Bullen Point.

However, potential effects of Sale 97 on ANWR are addressed in Sections IV.B.3, Marine and Coastal Birds, and IV.B.6, Caribou. The possible tie-in of an offshore pipeline from Sale 97 to onshore infrastructure associated with potential ANWR oil development is considered in the referenced section on caribou. Also discussed in this section are the cumulative effects of an OCS and ANWR pipeline.

Response 2-11

Stipulations are prepared to mitigate potential adverse effects where no other laws, regulations, or orders are in place to provide such mitigation. In the case of causeways, a stipulation is deemed inappropriate because regulations are in place to potentially mitigate adverse effects. The construction of causeways is regulated by a permitting process administered by the U.S. Army COE under provisions of Section 404 of the Clean Water Act. Under this process, an environmental assessment would be made of several site- and design-specific alternatives that would allow the most environmentally-preferred alternative to be identified. Mitigating measures also could be required during this process.

Stipulation No. 5--Transportation of Hydrocarbons--sets forth criteria that must be fulfilled before subsea pipelines can be required.

Also, see Response 21-41.

Response 2-12

The Secretary of the Interior has the option of deferring from the Sale 97 proposal area any or all of the deferral areas analyzed in the FEIS or areas proposed after consultation with the Governor of Alaska, pursuant to Section 19 of the OCSLA, as amended.

Response 2-13

The Chukchi Deferral Area was also part of the area analyzed in the EIS for Sale 87--the third OCS oil and gas lease sale in the Beaufort Sea (formerly Diapir Field) Planning Area. The Sale 87 EIS analyzed the potential effects on the environment from petroleum exploitation.

The focus of the EIS on the resources and effects in the Beaufort Sea is appropriate. Approximately 800,000 hectares have been leased in the Beaufort Sea part of the Beaufort Sea Planning Area; none of the blocks in the Chukchi Sea part of the planning area have been offered for lease. Thus, leasing is anticipated to continue in the Beaufort Sea, but interest in the Chukchi Sea part of the planning area is an unknown factor. Additionally, (1) petroleum-exploitation activities in the Beaufort Sea could potentially affect many more resources and systems than in the Chukchi Sea and (2) the possible effects of petroleum activities on any resources of the Beaufort Sea would be essentially similar for the same resources in the Chukchi Sea.

The general effects of construction for an onshore pipeline that originates in the vicinity of Point Belcher are analyzed in the noise and disturbance and construction-activities discussions in Section IV.B. Furthermore, the onshore-pipeline route across NPR-A from Point Belcher to TAP Pump Station 1 is basically the same as that analyzed in the Sale 87 FEIS.

Although this comment contained no examples of the significant differences between the Beaufort and Chukchi Seas, the responses to specific comments that follow are assumed to address these concerns.

Response 2-14

The number of helicopter flights flown in direct support of Sale 97 exploration and development and production activities are discussed in Section II.A and summarized in Table II-A-1. During the 5- to 6-year exploration period, an estimated 1,350 flights will be flown; this is about 1 flight per day for this period. During the 1- to 2-year period when development wells are being drilled, an estimated 1,755 flights will be flown; this is about 2 or 3 flights per day. Because only a fraction of these flights may have to be flown at altitudes below 1,500 feet, it is not anticipated that the number of helicopter trips flown below 1,500 feet will have a measurable effect on the biological resources.

Response 2-15

ITL No. 2 has been amended to include the Colville River Delta and Cross, Pole, Egg, and Thetis Islands.

Response 2-16

MMS believes that potential lessees--many of whom testified at the ANWR Public Hearing in Anchorage, Alaska, on January 5, 1987--are well aware of the land status of ANWR; the status of ANWR is summarized in Appendix B.

Response 2-17

Although a specific reference had already been made in the text to note where the location and specifics concerning the algae could be found, the text in Section III.B.1.c(1)(a) has been expanded to include further details.

Response 2-18

Section III.B.3 has been amended to address this concern.

Response 2-19

In Graphic 3, tundra swan-concentration areas are shown only on ANWR because of the availability and accuracy of data--this species' habitats were studied and differentiated from other waterfowl on ANWR by Bartels and Doyle (1984) in the ANWR 1983 Update Report conducted by FWS. Graphic 3 also represents the Colville River Delta as a major concentration area for marine and coastal birds because of the high densities of other waterfowl species as well as tundra swans that occur on the Colville Delta. The Canning River Delta is listed as an area of Special Biological Sensitivity in ITL No. 2.

Response 2-20

Most polar bears in the Sale 97 area den on the sea ice; the locations of their dens vary greatly from year to year depending on ice and snow conditions. The locations of land dens also vary considerably from year to year; consequently, showing the land locations of past dens would misrepresent the importance of such dens to the polar bear population.

Response 2-21

Summer-movement-pattern arrows on Graphic 5 point to and from the coast as well as along the coast. Postcalving-concentration areas are highly variable from day to day, let alone from year to year--the postcalving aggregations of caribou generally are moving and can occur anywhere on the summer range. Any attempt to designate site-specific caribou-aggregation locations on Graphic 5 would misrepresent the distribution designations of the caribou herds. Only the calving ranges are geographically specific from year to year and can be meaningfully represented on Graphic 5.



United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VA. 22092

Response 2-22

Graphic 6 has been revised to reflect the 1987 to 1991 proposed lease schedule of the State of Alaska.

Response 2-23

Potential effects to the Boulder Patch community are considered to be more significant, based on the observations of Dunton et al., 1982. However, some discussion of potential effects on these other kelp/algal assemblages has been added to the text in Section IV.B.1.a(1)(a).

Response 2-24

This concern is addressed in Response 2-5. Although Pacific, red-throated, and yellow-billed loons may feed in coastal lagoons or in offshore waters, these species do not occur in large numbers or in concentrations--very few individual birds of these species are likely to come in contact with oil spills, and MAJOR effects are very unlikely to occur. Neither are Ross's gulls and shorebirds such as phalaropes, dunlins, and sanderlings likely to be oiled by potential oil spills because they spend little time setting on the water in the marine environment. Thus, none of these species is likely to suffer high losses due to cumulative oil spills.

Response 2-25

The text in Sections II.A.4 and IV.B.6.a(3)(a) has been clarified.

Response 2-26

The assumptions for the pipelines associated with Sale 97 and previous lease sales are discussed in Section II.A.4. The data in Table II-A-1 have been revised to reflect the corrected length of the pipeline from Bullen Point to TAP Pump Station 1.

In Reply Refer To:
WGS Mail Stop 423

MAIL 6 1987

Memorandum

To: Regional Director, Minerals Management Services,
Anchorage, Alaska

From: Assistant Director for Engineering Geology

Subject: Review of draft environmental statement for the proposed 1988
OCS Oil and Gas Lease Sale 97, Beaufort Sea, Alaska

We have reviewed the statement as requested in your memorandum of November 10.

There is a high probability that oil spilled in the Beaufort Sea will contact land. Also pipelines are expected to come ashore at various points. Onshore facilities, including large storage tanks will probably be necessary during production. We suggest that the potential for impacts on ground-water resources should be considered. Oil can penetrate the sands and gravels of the coastal area, thus slowing biodegradation processes. Some components of crude oil are reportedly very persistent in ground water ^{1,2/}. Mitigation of related impacts should be addressed.

3-1

James F. Devine

108 James F. Devine

- 1/ Duffy, J.J., Mohtadi, M.F., and Peak, E., 1977, Subsurface Persistence of crude oil spilled on land and its transport in ground water, in American Petroleum Institute, Environmental Protection Agency, and U.S. Coast Guard Proceedings 1977 Oil Spill Conference, March 8-10, 1977, New Orleans, Louisiana: p. 475-478.
- 2/ Raisbeck, J.M., and Mohtadi, M.F., 1974, The environmental impacts of oil spills on land in the Arctic regions: Water, Air, and Soil Pollution 3 (1974), p. 195-208.

Copy to: District Chief, WRD, Anchorage, Alaska



United States Department of State

4

Response 3-1

Shoreline oiling and persistence of oiled shoreline are discussed in Section IV.A.2.b. Onshore groundwater is not at risk from Sale 97. There is a 23-percent chance that at least one oil spill of 1,000 barrels or greater could occur and then contact land within 10 days during the open-water season. The land contacted would most likely be a narrow, meter(s)-wide strip of shoreline. Weathered or even fresh crude has little tendency to penetrate into the cold, water-saturated peats that predominate on the mainland shore (see Sec. IV.A.2.b). Even if a spill penetrated the seasonally thawed surface layer of soil, permafrost of a few-hundred-meters thickness would still isolate the oil from groundwater resources.

The possibility of groundwater pollution from leaky onshore-storage tanks during production is not considered because all offshore oil would be piped into the TAP: no large onshore-storage tanks would be built for produced oil from Sale 97.

*Bureau of Oceans and International
Environmental and Scientific Affairs*

Washington, D.C. 20520

January 23, 1987

Regional Director, Alaska OCS Region
Minerals Management Service
949 East 36th Avenue, Room 110
Anchorage, Alaska 99508
Attention: Dick Roberts

Dear Mr. Roberts:

I regret the delay in submitting these comments on the Draft Environmental Impact Statement on Beaufort Sea Lease Sale 97, but copies of the draft only became available to the Department of State subsequent to your January 6 closure date. I hope that the following comments will nonetheless be of value to MMS in preparing the final EIS.

Although the area evaluated for possible leasing abuts the boundary area with Canada, and possible environmental activities in the lease area clearly could have environmental impacts on the Canadian side of the boundary area, or in areas beyond Canadian or U.S. jurisdiction, there is no clear reference in the draft to such possible impacts, as required by Executive Order No. 12114, dated January 4, 1979. We believe this order, titled "Environmental Effects Abroad of Major Federal Actions," should be referred to in paragraph 6 on page I-3 as one of the legal and administrative bases for the environmental review, and appropriate references should be made in the EIS to situations where specific actions, events or mitigating measures could have or could eliminate a "spillover effect" on the Canadian side of the border.

4-1

For example, while there are actually some implicit negative findings, such as an elimination or reduction of the impacts of certain activities on bird or mammal habitats "east of Kaktovik" under Alternative V, there appears to be no systematic approach to the question of crossborder impacts in relation to key issues such as, e.g., possible oil spills, under any of the analysis done in relation to the proposed action or the several alternatives studied.

If the Department of Interior has concluded that the proposed action or alternatives will not "significantly affect the environment" (as defined in E.O. 12114) of Canada, thereby obviating the need for such assessment in the draft EIS, we would appreciate information about the basis for the conclusion and the process by which it was arrived at. In this regard, we understand that the Department of Interior does not have its own procedures for implementation of E.O. 12114, and we, in conjunction with the Council on Environmental Quality, would be pleased to assist appropriate Interior officials in Washington concerning this matter.

4-2

In another aspect of this international connection, we note that there is no reference in the draft EIS to consultation or coordination with any Canadian authorities or sources in the scoping for or preparation of the draft EIS. Further, one specific place where it would have appeared that some reference to potential cooperation with Canada would have been particularly relevant is in the section on oil spill contingency measures starting on page IV-A-13. That is, in section A.2.c., we did not note any mention of the U.S.-Canada Joint Marine Pollution Contingency Plan. It would seem appropriate to refer to this Agreement, which extends to the Beaufort Sea, in the EIS.

4-3

Another important subject in relation to which we believe there should be some mention of Canadian interest is the Porcupine Caribou Herd. There is significant discussion of the PCH starting on page IV-B-13, but no reference that we discerned concerning the international nature of the Herd. Apropos this issue, we suggest the following be inserted in the section marked "conclusion", on page IV-B-68:

4-4

"The United States and Canada initialled a draft agreement on the conservation of the Porcupine Caribou Herd in December 1986. The agreement would provide for an International Porcupine Caribou Board to share information on the conservation of the herd, assist in cooperative conservation and planning for the herd throughout its range, review available data and, as necessary, make recommendations to the respective governments concerning matters which affect the herd or its habitat."

We would also suggest referring to this language under the sections in the paragraphs marked "caribou" for the alternative proposals, (pages IV-D-2, IV-E-6, IV-F-5 and IV-G-5). This appears relevant to the goals of this EIS since it provides information concerning concrete efforts (albeit not finalized) to minimize possible adverse environmental impacts of actions in the caribou habitat.

4-5

On another issue, I would note that figure 1-1 (map showing the Beaufort sea planning area), following page I-9, portrays blocks east of 141°E. as having been leased. Our understanding, as described on page I-6, of the draft EIS, is that no blocks have been leased in the area of dispute east of 141°E. Instead, monies from bids for sale 87 have been put in escrow. We suggest correction of the map to make it consistent with the section I.A. "Leasing History" outlined on page I-6, and the present leasing status.

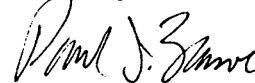
4-6

Finally, with respect to the statements by the Yukon Territory objecting to the inclusion of areas claimed by Canada in sale 97, we suggest the following response:

"The United States has advised the Government of Canada by Diplomatic Note that it does not accept that any part of lease sale 97 encroaches on Canada's sovereign rights in international law and that it does not share the Canadian view that the location of the maritime boundary in the Beaufort Sea follows the 141 st Meridian. However, in recognition that there is no agreed maritime boundary and that part of sale 97 is subject to an overlapping claim by the Government of Canada, the United States has advised the Government of Canada that this part, like sale 87, will be subject to special procedures. Pursuant to these procedures, which are without prejudice to U.S. interests or a future settlement, the Department of Interior will place in escrow the highest acceptable bids for tracts in the disputed area. Such procedures do not constitute an acceptance or rejection of a bid for purposes of granting leases."

4-7

Sincerely,



Paul J. Glasoe
Environmental Assessment Coordinator

CC: CEQ - Dinah Bear
MMS - Richard Miller

Response 4-1

Although the Beaufort Sea Sale 97 is a major Federal action, it does not qualify under Section 2-4(b) of Executive Order No. 12114 as significantly affecting the "environment," as defined in Section 3-4, and action doing "significant harm to the environment."

The Department has complied with Section 3-5 with the preparation of this document. The EIS that is prepared for a lease sale is generic in that it serves the decisionmaker in deciding, among other things, whether or not to hold the lease sale. Until MMS receives a site-specific plan from a lessee, it does not have the ability to make specific findings. If, however, prior to any exploration or development and production phases or during MMS monitoring of any OCS activities it is determined that the environment, including the Canadian environment, is significantly affected, an EIS will be prepared and procedures in Section 2-4 will be fully applied.

The concern regarding oil spills is addressed in Response 21-55.

Since the DEIS was published, there has been a joint U.S.-Canadian meeting to discuss Arctic fisheries and the marine mammal and fish species of mutual concern. Communication has increased, and possible joint-research projects are being developed. Concerns regarding caribou are addressed in Response 4-4.

Response 4-2

The effects on the natural and physical resources in the proposed lease-sale area are expected to be MINOR, except for a possible MODERATE effect on marine and coastal birds. The area outside the lease sale would not exceed these effect levels and in most cases would be either MINOR or NEGLIGIBLE. The net transport of oil spills from offshore sources moves from east to west, away from Canadian waters.

Potential oil spills originating in the Canadian Beaufort Sea from Canadian platforms, pipelines, and tankering would be transported into the proposed lease area. These potential events have been considered in the cumulative-case analysis.

Response 4-3

Section IV.A.2.c has been amended to include a discussion of the Canada-U.S. Joint Marine Contingency Plan.

Response 4-4

The international nature of the Porcupine caribou herd (PCH) is noted in Section III.6, and calving areas and movement patterns are shown in Graphic 5. A brief description of the Draft International Agreement on the PCH has been added to Section IV.B.6.b.(5).

Also, see Response A-38.

Response 4-5

Reference to the draft agreement between the U.S. and Canada on the conservation of the Porcupine caribou herd is not relevant to discussions of the delay the sale alternative in Section IV.D.6 or the deferral alternatives in Sections IV.E.6, F.6, and G.6. A 2-year delay in Sale 97 would not be expected to affect the timing of development on existing leases from Sale 87. Neither is deferral of additional lease sales offshore of ANWR expected to greatly influence ANWR exploration or development. The fact that the Porcupine caribou herd calving grounds are on a national wildlife refuge has far more legal protection for the caribou herd and its habitats than the above draft agreement.

Response 4-6

The map has been corrected to reflect the proper status of bids received in the contested area; see Section I.D.

Response 4-7

Section I.B has been amended to include a discussion of the jurisdictional controversy between Canada and the United States on the Sale 97 eastern sale boundary.

027 0 9 1987



REPLY TO
ATTN OF M/S 443

William Bettenberg, Director
Minerals Management Service
Department of the Interior
Washington, D.C. 20240

Dear Mr. Bettenberg:

The Environmental Protection Agency (EPA) has reviewed the draft Environmental Impact Statement (DEIS) for the proposed Outer Continental Shelf (OCS) Oil and Gas Lease Sale 97 in the Beaufort Sea. Our review was conducted in accordance with the National Environmental Policy Act (NEPA) and our responsibilities under Section 309 of the Clean Air Act.

EPA has been involved with this EIS for over a year. We requested to be a cooperating agency in the preparation of this EIS in scoping comments submitted in March 1985. EPA and the Minerals Management Service (MMS) agreed that EPA would prepare an appendix to the EIS dealing with the fate and effects of exploratory phase oil and gas drilling discharges. MMS provided us with a preliminary draft of the water quality and air quality sections of the EIS in February 1986 and comments were provided on these sections. We now offer the following comments on this DEIS.

We noted several changes and improvements in this DEIS compared to past EISs for lease sales in the Beaufort Sea. EPA has commented on several occasions in the past that there should be separate impact definitions for threatened and endangered species that reflect their vulnerability and sensitivity to further stress and impacts. This DEIS presents new impact definitions for endangered species that are different from the impact definitions for other biological resources. This DEIS has an expanded discussion of the feeding relationships and impacts to these relationships. The impact assessment section considers the availability of food sources to predators. We noted the greatly expanded subsistence discussion; it provides much useful information. This EIS also has a new layout; the table of contents at the beginning of each section facilitated our review.

We have several concerns that are summarized in the paragraphs that follow. Our concerns are fully described in our attached detailed comments. Most of our comments are aimed at improving the data base for decision making on the leasing options for the proposed 21 million acre sale area.

Existing Environment

There are significant data gaps with regard to the northern Chukchi Sea portion of the sale area, fishery resources and their dependence on the coastal ecosystem, the importance of the eastern Bowhead whale feeding area, and the effects of drilling activities on the Bowhead whale fall migration.

We have suggested additional information that is needed to strengthen the existing environment discussion. An adequate discussion of the biological resources, habitat values, and feeding relationships is needed in order to provide an appropriate framework upon which to base the analysis of impacts and the suitability of leasing.

Environmental Consequences

We are concerned that the approach used to assess impacts has resulted in an understatement of the significance of these potential impacts. We believe that the impacts are understated for several reasons.

First, we are concerned about the possibility that several of the effects from a variety of activities could cause a more severe or serious effect than is anticipated from any one effect-producing activity. The DEIS provides no real synthesis of the combined effect of a variety of activities. The potential exists for a "synergistic" response: several minor effects associated with various activities could result in a moderate or major effect to a resource.

5-1

Second, we believe that the analysis of the proposed action apart from the numerous on-going projects on the North Slope is not representative of the current oil and gas industrial development occurring in the area. The impacts associated with the cumulative case analysis are more realistic and representative of the current oil and gas development situation.

5-2

Third, more prominent use and display of seasonal conditional probabilities would improve the discussion of oil spill impacts. Conditional probabilities represent the probability that if oil is spilled at a specific location it would contact either land or a biological resource. The conditional probabilities give the EIS reviewer a better understanding of what resources could be at risk if oil is spilled. This information is essential in order to assess the significance of oil spill impacts. Where the habitat or resource is particularly critical (i.e., an endangered species or primary feeding area), such that any spill could have serious impacts on a population or habitat, the decision-maker and the public should see not only the combined probabilities incorporating risk of a spill occurring (as is the case for this DEIS), but also the conditional probabilities.

5-3

Finally, our detailed comments provide numerous instances of information that we believe is not adequately considered in the DEIS. These information gaps, in the aggregate, weaken the conclusions drawn regarding the environmental consequences described in the DEIS. We believe that a more thorough description of several ecosystem relationships will result in a projection of more serious impacts.

Alternatives

Our major concern for this lease sale is with the scope of the proposed action itself. The DEIS analyzed six alternatives: I-The Proposed Action, II-No Sale, III-Delay the Sale, IV-Barrow Deferral, V-Kaktovik Deferral, and VI-Chukchi Deferral. We believe that all three of the deferral alternatives deserve special consideration.

Leasing in this area will pose some degree of risk to the biological resources, habitat, and human populations and their associated socioeconomic systems. Based on the cumulative effects of oil and gas exploration and development in the Beaufort Sea region, numerous major and moderate effects have been identified. Given the sensitivity of the biological resources and the natural stresses which they must survive, any additional stresses or impacts could be significant. Each deferral alternative represents some reduction of the risk of spilled oil affecting biological resources and habitat. Deferral of blocks would also eliminate noise and disturbance effects.

The Barrow deferral alternative provides protection to the Bowhead whales during their spring migration. It is well established that the blocks proposed for deferral are of critical importance to the whale spring migration. We strongly support this alternative.

There are significant information gaps associated with the Chukchi and Kaktovik deferral areas. These gaps represent unknowns and uncertainties that warrant a careful leasing approach that attempts to balance concerns about biological resources and habitat with leasing decisions.

We recommend that MMS reconsider the inclusion of the Chukchi deferral area in this sale until more basic environmental information can be gathered. Delaying the sale in this area will allow more time to gather data before the next Beaufort Sea lease sale.

In the case of the Kaktovik deferral alternative, we believe leasing decisions in this deferral area should wait upon the analysis of the results from studies recently conducted to assess the importance of the Bowhead whale feeding area (within the deferral area) and the effects of drilling activities on Bowhead whale fall migration. We suggest that MMS incorporate in the FEIS the results from these studies if they are available. This will provide EIS reviewers with the necessary information for commenting on the lease sale configuration and the acceptability of impacts.

5-4

Mitigation

We support the proposed stipulations and Information to Lessees (ITLs) presented in the DEIS. We will reconsider these mitigation measures in light of any new information presented in the FEIS.

Water Quality and Air Quality

We are restating many of the concerns that we expressed in our comments on the preliminary draft water quality and air quality sections. We are providing several suggestions for improving the discussions found in these sections.

Conclusions

The simple and direct nature of the Beaufort Sea feeding relationships makes it more sensitive and vulnerable to impacts. Additionally, the natural stresses that the biological communities must survive make them particularly sensitive to any additional human caused effects. For these reasons, we believe that any additional impacts should be considered significant.

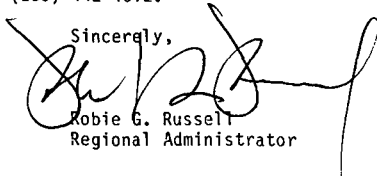
Numerous potential moderate and major impacts to fish, marine and coastal birds, the endangered Bowhead whale and the habitats on which they depend, and the subsistence use of these biological resources are identified in the DEIS. We believe that the deferral alternatives represent some reduction of the risk of spilled oil affecting biological resources and habitat. These alternatives would also reduce noise and disturbance effects to birds, marine mammals, and subsistence hunting activities.

The DEIS has identified significant environmental impacts associated with the proposed action. We believe that these adverse impacts could be reduced by implementation of any or all of the deferral alternatives in conjunction with implementation of appropriate mitigation. On this basis, we are rating the proposed action, Alternative I, EC-2 (Environmental Concerns - Insufficient Information). The "insufficient information" rating is based on the need for more comprehensive and detailed discussions in the Existing Environment Sections, the need for the Bowhead whale study results, and a revised analysis of impacts. We believe that the noted data gaps and revisions of impact analysis in this DEIS are significant. Once again, we strongly recommend you adopt the Barrow deferral. If the FEIS does not adequately address them EPA may need to supplement the FEIS before issuing a permit that regulates new sources.

5-5

Thank you for the opportunity to comment on the DEIS. We would like to meet with you to discuss our concerns with this proposed action. If you have any questions, please feel free to have your staff contact Dan Steinborn at (206) 442-8505 or Salli Brough at (206) 442-4012.

Sincerely,



Robie G. Russell
Regional Administrator

Enclosure

SUMMARY OF THE EPA RATING SYSTEM
FOR DRAFT ENVIRONMENTAL IMPACT STATEMENTS:
DEFINITIONS AND FOLLOW-UP ACTION *

Environmental Impact of the Action

LQ--Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities with no more than minor changes to the proposal.

EC--Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EQ--Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1--Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information

The draft EIS does not contain sufficient information for EPA fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3--Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment

U.S. ENVIRONMENTAL PROTECTION AGENCY
BEAUFORT SEA LEASE SALE 97 DEIS
DETAILED COMMENTS

INTRODUCTION

As noted in our letter, there are several aspects of the DEIS which could be revised and expanded to strengthen the document and give the Secretary and the public a clearer picture of the environmental results of oil and gas development within the proposed 21 million acre sale area. Our discussion of concerns and recommended changes to the EIS follows.

EXISTING ENVIRONMENT

Chukchi Information Needs:

Section III of the DEIS contains little site-specific information about the extreme western portion of the proposed lease sale area in the Chukchi Sea. The environmental characteristics of this area are sufficiently different to warrant separate analysis. There appear to be few if any on-going or proposed research efforts in this area to address environmental information needs.

There are no data for benthic communities and fishery resources in the Chukchi Sea. The trophic discussions for lower trophic level organisms and fish are focused on Beaufort Sea (not Chukchi Sea) energy/carbon transfer relationships. The broad shallow Chukchi Shelf could have significantly different energy transfer dynamics.

The FEIS should provide more site-specific information about the biological resources found on the Chukchi shelf, the trophic structure and energy transfer dynamics. If there is no such information, the FEIS should clearly state that data are lacking. If the EIS analysts assume for the sake of impact analysis that the biological communities and trophic structure of the northern Chukchi Sea are similar to the Beaufort Sea, this should be discussed. A rationale for this assumption should be provided.

Fishery Resources:

We have several concerns with the Existing Environment discussion of fish resources and habitat in the Beaufort Sea. As you may be aware, EPA is involved in reviewing extensive water quality monitoring efforts associated with the West Dock and Endicott Projects. Minor water quality effects resulting from the causeways built for these projects are suspected of having the potential for significant adverse impacts on the fish resources in the Beaufort Sea. Therefore, our involvement in these water quality monitoring efforts has also provided us with extensive data on the fish resources and their habitat use of the inshore and nearshore waters of the Beaufort Sea.

Pink salmon are marginal members of the anadromous fish fauna in the Alaska Beaufort Sea. The DEIS' discussions of fish resources focuses on this species rather than the many other arctic anadromous species (Arctic char, Arctic cisco, etc.).

It is not apparent that the biology of the different fish species and their local availability were factored into the subsistence fisheries analysis in Section III. The discussion of subsistence fishing provides little discussion of the variation in the subsistence use of fish among the different villages. The DEIS uses the same species list for each village. The FEIS would be greatly improved by providing village-specific discussions of the species important to the subsistence uses of each village.

The DEIS describes the anadromous species as pelagic. Arctic cisco, Arctic char, least cisco, and broad whitefish are not truly pelagic in the Beaufort Sea. These species inhabit waters that vary in depth from 1.5 to 5 meters. This shallow water habitat can be classified more as estuarine or coastal than pelagic. The FEIS should clarify the use of the shallow nearshore and inshore areas by anadromous species.

The FEIS should expand the discussion of the importance of the coastal nearshore ecosystem to anadromous species. Juveniles, non-spawning, and post-spawning fish are all found in the coastal environment. The DEIS states that this area is used by juveniles, however, more than one year class uses the nearshore area.

Related to the importance of the coastal ecosystem to fish species is the importance of coastal feeding habitats to population dynamics of Arctic fish species. The DEIS does not provide an adequate discussion of the annual energy budgets of anadromous fish. Successful summer feeding is of critical importance to population dynamics and recruitment. Food energy from the coastal environment is important for overwintering survival, fecundity, egg size, growth, and maturation. The FEIS should provide a more detailed discussion about the importance of coastal feeding habitats to population dynamics. This will provide an appropriate framework as a basis for the assessment of impacts.

Bowhead Whale Information Needs:

Major concerns were expressed for Sale 87 about the effects of oil and gas activities on bowhead migration and feeding, specifically in the eastern portions of the sale area. In spite of these concerns, leasing was conducted in the eastern portion of the sale area in Sale 87, and environmental studies were conducted in 1985 and 1986 to address these concerns. Studies were initiated to assess the behavioral responses of bowhead whales to drilling activities during their fall migration and the importance of the eastern area as a bowhead whale feeding area. The results from these studies are not currently available.

We strongly suggest that MMS make every effort to obtain the results of these studies and incorporate the findings into the FEIS. It is critical to understand the importance of this area as a feeding area. It is also essential to determine the behavioral responses of bowheads to exploration

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activity. Again, this provides an appropriate framework upon which to base the analysis of impacts. This information is also needed for proper evaluation of the effectiveness of the proposed mitigation measures and the need for additional mitigation.

Polar Bears:

The Arctic National Wildlife Refuge (ANWR) Coastal Plain Resource Assessment draft legislative EIS (LEIS) provides useful information about the status of the arctic polar bear population. The draft LEIS indicates that 87 percent of polar bear dens in 1983 to 1985 were located offshore. They could therefore be adversely affected by OCS activities. The draft LEIS also indicates that the Beaufort Sea population can sustain little, if any, increase in mortality of females. Population estimates indicate that the number of animals dying each year is approximately equal to the population increase from reproduction (p.118 ANWR LEIS). This information is not clearly presented in the DEIS for this sale. The FEIS should discuss more fully the population dynamics of polar bears and the fact that the population may not be able to survive perturbations that would result in the death of individuals or decrease the reproductive rate.

5-15

Water Quality:

A more detailed discussion of our concerns about water quality can be found in the pages that follow. We would, however, like to point out that the criteria values presented on Table III-D-2 in Section III should be updated using 50 FR 30784. EPA has not set "Dissolved" saltwater criteria. This should be corrected in the FEIS.

5-16

ENVIRONMENTAL CONSEQUENCES

Combined Effects:

We have several concerns about the impact analysis presented in the DEIS. First, the conclusion statements imply that the "combined effects" from all effect-producing activities (oil spills, drilling discharges, construction activities) will be no greater (or less) than the effects from any individual effect-producing activity. We are concerned about the possibility that several of the effects from a variety of activities could interact to cause a more adverse or serious effect than is anticipated from any one activity. Is it possible that several MINOR effects from various activities could result in a MODERATE or MAJOR effect?

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The DEIS provides no real synthesis of the combined effects of a variety of activities. Some discussion of the likelihood of a biological resource encountering a combination of activities within a given time frame (24 hours, week, month, migration period, molting period, staging period, etc.) is needed to support the combined effects conclusion. This is particularly important given the sensitivity of the biological resources and the natural stresses which they must survive.

5-18

Cumulative Effects:

There appears to be a significant difference between the potential impacts associated with the proposed action and the deferral alternatives and the impacts associated with the cumulative case. The cumulative effects are more adverse for most resource categories than those for the proposed action alone.

We believe that the analysis of the proposed action apart from the numerous on-going projects is not representative of the current oil and gas industrial development occurring in the area and may underestimate the impacts. We also recognize that the cumulative impacts analysis includes numerous future projects and may overestimate the impacts from existing activity and development.

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Accordingly, we believe that focusing attention on the impacts associated with the cumulative case analysis is more representative of the current oil and gas industrial development situation on the North Slope. Because the cumulative analysis takes into account many future projects, focusing on the cumulative impacts will be an environmentally conservative approach for assessing the impacts from the proposed alternatives in conjunction with on-going projects.

5-20

Conditional Probabilities:

We commend MMS for presenting seasonal conditional probabilities. We would like to recommend, however, that conditional probabilities be used more extensively in the environmental consequences discussion. We felt that the Norton Basin Sale 100 DEIS and FEIS represented a significant improvement over past Alaskan OCS lease sale EISs, specifically because the Norton Basin EISs relied on the annual and seasonal conditional probabilities rather than annual combined probabilities for impact assessment. Use of conditional probabilities (annual and seasonal) for assessing environmental consequences allows the EIS reviewer to:

- identify launch points that represent the greatest risk to vulnerable/sensitive habitats and biological communities;
- identify the targets (sea, ice, biological resource areas, land segments) most likely to be contacted by spilled oil;
- determine the season that these targets are most susceptible to oil contact;
- determine if the seasonal risk of oil spill contact corresponds with the seasonal presence of biota; and
- distinguish clearly the differences in oil spill risk between the proposed alternative and the deferral alternatives.

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We believe this approach is more informative and more conservative. Use of annual and seasonal probabilities identifies the environmental effects, their potential scope, and their magnitude, assuming a spill occurs. Since the risk of spilling oil can never be completely eliminated, conditional probabilities represent an extremely useful tool for impact assessment.

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This recommendation appears to agree with the approach already taken by the MMS EIS analysts. The responses to comments found in the Norton Basin FEIS (response 1-13) indicate that the EIS analysts use combined annual, combined winter, combined summer, annual conditional, winter conditional, and summer conditional probabilities to determine the seasons and the areas in which the resources may be particularly vulnerable to oil spills.

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The environmental consequences discussion references primarily the combined probabilities. If the other probability numbers are generated for use in impact analysis, they should be incorporated into the environmental consequences discussion. Specifically, as we discussed in the paragraphs above, we recommend more extensive use and visibility of the seasonal conditional probabilities in the environmental consequences discussion.

5-24

Combined probabilities combine the conditional probabilities with expected spill rates, transportation scenarios, and the unrisksed mean-resource estimates. They provide an assessment of the probability that oil will be spilled and contact resources. This is important information. However, if the probability of spill occurrence is low, it does not logically follow that the effect of a spill will be negligible. Therefore the probability of an oil spill should be separated from the direct assessment of impacts. Thus, the conditional and combined probabilities both provide important information to the decision-maker, but conditional probabilities are needed so that the public and decision-makers can fully assess the significance of potential impacts.

5-25

Using the information from the oil spill trajectory analysis as well as the combined probabilities allows EIS reviewers to make a reasoned judgment about the need for additional mitigating measures or potential deferrals of launch point areas that pose a significant risk to critical habitat or sensitive biota.

5-26

Adequacy of Impact Conclusions:

Our final concern about impact assessment is related to the deficiencies that we noted previously in the existing environment discussion. In general, the impact analysis is based on a thorough understanding of the biological resources found in the area; the dependence of these populations on habitat that supports various activities and life stages; the availability of various habitat types; the population dynamics of a species and its ability to cope with perturbations; and the trophic relationships that exist among species

groups. The DEIS in several instances has not presented a thorough description of some of these general ecosystem relationships. Thus, we are concerned about the adequacy of some of the impact conclusions. A more detailed discussion of our concerns follows.

Fishery Impacts:

The impact analysis uses salmon as a reference species. They do not represent a major proportion of the arctic fish fauna. We recommend that the discussion and impact analysis in the FEIS should be focused on species like Arctic char and Arctic cisco.

5-27

The oil spill effects analysis is based on the premise that Arctic char, Arctic cisco, least cisco, and broad whitefish are pelagic. As we pointed out in the previous section, these species are not truly pelagic. They inhabit estuarine or coastal habitats. By assuming they are pelagic, the potential effects of an oil spill on these species are understated.

5-28

More than one year class of fish would likely be affected by an oil spill contacting the nearshore area, contaminating the water column, and potentially the sediments. An oil spill could affect the total population comprised of all year classes and not just the juveniles upon which the DEIS focuses. The nearshore area represents both rearing and feeding habitat for entire anadromous fish populations.

5-29

The effect from an oil spill would not necessarily involve direct mortality of the fish present in the affected area. Any loss of time from the critical feeding period (early open water period) could affect annual energy budgets. Spilled oil during spawning could affect spawning runs and spawning habitat. An oil spill just before freeze-up could act as a barrier to fish reaching their overwintering habitats. All these non-lethal effects could significantly affect population dynamics and future recruitment.

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The DEIS concludes that a MODERATE effect is possible based on the assumption that a single year class would be affected. Since an oil spill could affect more than one year class, a MAJOR effect should be considered.

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Anadromous fish distribution, movement, and habitat could be affected by pipeline installation, dredging activities, and causeway construction. Overwintering habitat could be affected by dredging. Depending on the duration of construction activity, construction could affect fish movement and distribution. Causeways, built to allow pipelines to reach shore or built in association with oil and gas exploration and development, could disrupt longshore transport and affect temperature and salinity. These effects could adversely affect population dynamics and recruitment which could result in more than a MINOR effect.

5-32

Bowhead Whales:

The DEIS discusses the effects of noise and disturbance on Bowhead whales. It identifies in several instances that Bowhead whales have exhibited behavioral responses to noise producing activities from two to seven kilometers away. The conclusion statement on page IV-B-54 states that "whales may avoid feeding within several hundred meters of drilling units and production platforms." This would appear to be inconsistent with the information presented in the previous pages of the EIS. It also understates the potential effects of noise and disturbance. The results of ongoing studies to address this issue are not available.

5-33

The "several hundred meters" value is used in numerous instances in the environmental consequences discussion for all the alternatives as well as the worst case analysis. The conclusion of MINOR effects may not be supported by the available data. MODERATE or MAJOR effects could potentially occur. The FEIS should evaluate the effects from noise in light of the available data which indicate a larger areal extent than appears to have been used (several hundred meters) in the DEIS.

5-34

The results of studies to assess the behavioral responses to Bowhead whales to drilling activities during their fall migration and the importance of the eastern portions of the sale area as a Bowhead feeding area are needed. Without this information, it is difficult to fully assess the effects of the proposed action and whether any of the deferral alternatives can offer a reduction in impacts to this endangered species.

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Finally, the DEIS acknowledges (p. IV-B-17) that there have been few studies conducted for offshore fish. If there is a degree of uncertainty about the nature of these populations, their population dynamics, and any particularly critical habitats upon which they depend, then what is the basis for the MINOR impact conclusion? The FEIS should provide a more detailed discussion of why this conclusion is appropriate.

5-36

Polar Bears:

The conclusion statement (p. IV-B-37) appears to be in conflict with information presented in related documents. It is not apparent that the population dynamics of the North Slope polar bears have been fully accounted for in this conclusion. The polar bear population is in equilibrium. Recent analyses suggest that mortalities of female polar bears are now about the maximum the Beaufort Sea population can sustain without a corresponding decrease in population levels (ANWR LEIS p. 118). Any additional loss of individuals could represent a MODERATE or MAJOR effect.

5-37

ALTERNATIVES CONSIDERED

The proposed action will offer for lease 3,930 blocks (21.2 million acres) of the Outer Continental Shelf (OCS) in the Beaufort Sea and northern Chukchi Sea. The conditional mean economically recoverable oil resources of the unleased portions of the lease sale area are estimated to be 650 million barrels of oil (MMbbls). There is a 69 percent chance of recoverable oil being present. For the proposal, there is an 82 percent chance of one or more spills of 1,000 barrels or greater. For the cumulative case, there is a 99 percent chance of a spill greater than 1,000 barrels and a 65 percent chance of a spill greater than 100,000 barrels.

In addition to the proposed action, several other alternatives were evaluated. These alternatives include: II-No Sale, III-Delay the Sale for two years, IV-Barrow Deferral which would remove 201 blocks that have an estimated 20 MMbbls of recoverable oil, V-Kaktovik Deferral which would remove 161 blocks that have an estimated 90 MMbbls of recoverable oil, and VI-Chukchi Deferral which would remove 1592 blocks with an estimated 30 MMbbls of recoverable oil.

Leasing in this area will pose some degree of risk to the biological resources, habitat, and human populations and their associated socioeconomic systems. Based on the scale of the cumulative effects of oil and gas exploration and development in the Beaufort Sea region, numerous MAJOR and MODERATE effects have been identified. Given the sensitivity of the biological resources and the natural stresses which they must survive, any additional human induced stresses or impacts should be considered potentially significant.

Our major concern for this lease sale is with the scope of the proposed action itself. We believe that all three of the deferral alternatives deserve special consideration. Each deferral alternative represents some reduction of the risk of spilled oil affecting biological resources and habitat. Deferral of blocks would also eliminate noise and disturbance effects.

Alternative IV-Barrow Deferral:

The 201 blocks that would be deferred from leasing for this lease sale are of vital importance to bowhead whales during their spring migration. This area is also important to subsistence whaling activities. Deferral would eliminate the potential for oil spills affecting the corridor used for spring migration, habitat alteration, and noise and disturbance effects which could disrupt the bowhead whales during their migration through the area.

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Additionally, the deferral of these blocks would provide some degree of protection to birds and marine mammals. Deferral would eliminate activity in the high density seabird feeding area near Point Barrow, provide some reduction in oil spill risk, eliminate noise and disturbance effects to the Plover Islands and Peard Bay areas, and eliminate bird habitat alterations due to construction activities. For marine mammals, deferral would reduce oil

5-39

spill risk to belugha whales, ringed, bearded and spotted seals, and walrus. This alternative would minimize noise and disturbance from air and boat traffic and interference with subsistence hunting activities. We supported this alternative for these same reasons in the previous lease sale (Sale 87).

Alternative V-Kaktovik Deferral:

Our concern in the past lease sale was the importance of these blocks as a feeding area for bowhead whales. We supported this deferral alternative for Sale 87 for this reason.

It is our understanding that studies were recently conducted (1985 and 1986) to assess both the importance of this area as a bowhead whale feeding area and to assess the effects of drilling activities on the bowhead whale fall migration. However, the results of these studies are not yet available and have not been used in the analysis of impacts in this DEIS. Thus, it is possible that information useful in balancing biological resource and habitat concerns with leasing decisions is not available. In making this decision, it is important to have more complete information relative to the areal extent and duration of whale use of the area.

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Deferral of these blocks would reduce the risk of spilled oil contacting nearshore waters and land. This alternative would eliminate oil spill risks to birds from Kaktovik east including Jago and Beaufort lagoons. For marine mammals, there would be a significant reduction in oil spill risk to offshore habitat. Deferral would eliminate disturbance effects on ringed seals and polar bears and reduce noise, disturbances, and habitat alteration from offshore construction activities.

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For bowhead whales, there would be a slight reduction in oil spill risk to the spring migration corridor B. The DEIS states that "bowhead feeding activities in the deferral area would be less disturbed under this alternative" (p. IV-F-5).

5-42

Alternative VI-Chukchi Deferral:

The environmental characteristics of the Chukchi shelf are significantly different than those found in the Beaufort Sea. The broad shallow Chukchi shelf and polar pack ice are biologically important and are not well understood. However, the existing environment discussion in the DEIS is focused on the Beaufort Sea. There is an apparent lack of environmental information available for this deferral area. Additionally, there appears to be little on-going research to fill the existing environmental information gaps (Table IV-D-2). The impact discussion for this alternative is "boiler plate" (especially for lower trophic organisms) and does not focus on site-specific biological resources and habitats.

5-43

This alternative will reduce the noise and disturbance effects and habitat alteration for birds and marine mammals. The oil spill risk to marine mammal habitats, especially walrus during the open water season, would be reduced by this alternative.

During their fall migration, bowhead whales migrate across the southern half of the deferral area. Deferral of the blocks in this area would eliminate noise disturbance, habitat alteration, and the risk of oil spills.

5-44

MITIGATION

We support the proposed stipulations and Information to Lessees (ITLs) presented in the DEIS. However, the Bowhead whale information that we identified is necessary in order to properly evaluate the proposed mitigation measures and their effectiveness for minimizing impacts. We expect to reconsider the mitigation measures in light of any new information presented in the FEIS.

WATER QUALITY

General Concerns:

As we stated in our review of the preliminary water quality discussion for Sale 97, the description of water quality effects is general in nature. Often the spatial extent and timeframe of potential effects are described in nonspecific terms. Phrases such as: "relatively small area and short period of time, only in limited areas and for short periods," and "effects disappear shortly and were not spatially extensive," are used to characterize the effects on water quality. An order of magnitude estimate of the time and spatial extent would help to substantiate the impact conclusions. Quantifying the time and spatial extent of potential impacts is especially important since the definitions for the assessment of water quality effects do not specify timeframe limits for short-term and long-term impacts or limits on spatial extent for local and regional impacts.

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When numbers are used, there is no supporting discussion about how they were derived (hectares affected by dredging). A brief sentence or two in most cases would describe the basis for the numbers and would improve the water quality effects discussion. Reference is made to a local toxic-threshold concentration, but there is no specific number given. Without more detailed information, we find it difficult to assess the conclusions that are presented.

Finally, it is difficult to separate water quality impacts from their associated biological impacts. Minor water quality effects could result in significant impacts on biota. For example, minor changes in temperature and salinity, as a result of causeway construction at West Dock and Endicott, could cause far-reaching impacts to fish populations. Similarly, although minor water quality effects are identified for this lease sale EIS, the question is whether these changes will result in more than negligible or minor effects on biota. The FEIS should discuss the water quality impacts on fish.

5-46

Effects of Spilled Oil:

The discussion identifies situations where "degradation of existing pristine water quality is likely to occur." This statement should be tied to a direct comparison with any applicable state and federal criteria and standards. The FEIS should clarify if the "degradation" of water quality will involve any violations of water quality standards or criteria.

5-47

We remain concerned about sediment quality and contaminated sediment and how tar balls will affect water quality. The discussion on page IV-B-116 deals with the contamination of sediment with spilled oil. In one place it is stated that 40 percent of spilled Prudhoe Bay crude oil could persist as tar balls. A few sentences later, the range in deposition of oil in bottom sediments is given as 0.1 to 8 percent of slick mass. The implication is that this deposition range is also for tar balls. There appears to be a significant difference in the numbers for the amount of spilled oil reaching the bottom sediments. If the different numbers represent different processes, this should be explained. The discussion should be expanded to clarify how the oil is incorporated in the sediments and whether this differs from the process of tar balls sinking to the bottom.

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The text provides generalized descriptions of impacts without identifying the site specific features in the lease sale area that might be affected. The second paragraph on page IV-B-117 states that advection and dispersion will reduce the toxic effect of oil fractions. It goes on to give two exceptions where this reduction in toxic effects, due to advection and dispersion, is not likely to occur: embayments or shallow water areas under thick ice and in rapidly freezing leads. Both of these situations occur in the sale area.

5-49

Specifically, which embayments or shallow water areas under thick ice in the lease sale area might be subject to the exception? What are the impacts likely to be in these areas where advection and dispersion are not likely to reduce the toxic effect of oil fractions?

The toxicity discussion is focused primarily on water soluble aromatics and the effects on the water column. The discussion also seems to be focused on "deep water." There is no discussion of nearshore/shallow water situations where spilled oil is more likely to contaminate sediments. In areas characterized by high suspended sediment loads (like the Beaufort Sea) the petroleum derived aromatic hydrocarbons will adsorb to suspended particles and sink to the bottom where they may be quite persistent. Based on this, we feel that sediment quality should be discussed in greater detail. How contaminated sediment will affect the overlying water quality should also be examined.

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Finally, the DEIS identifies a MODERATE effect on water quality if there is a spill of 100,000 barrels or greater (p. IV-B-117). However, the conclusion statement states that this is an unlikely occurrence and that water quality effects from oil spills would be MINOR. Your response (15-19) to our

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comments on the North Aleutian Basin EIS indicate that it is MMS policy to separate the probability that an oil spill would occur from the assessed effect of an oil spill. It appears that the impact assessment has been linked to the low probability of a 100,000 barrel oil spill.

Effects of Dredging and Gravel Island Construction:

The discussion of these two activities could be improved by estimating the turbidity and suspended sediment levels that could be encountered. We realize that there are several variables that could affect these values. A range of values under various conditions would provide adequate information.

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Additionally, the discussion in the DEIS bases the analysis of effects on water quality from dredging activities on experience in other areas. This experience indicated that suspended sediment concentrations decreased in two to three hours and within one to three kilometers down current from the point of discharge. The time frame and spatial extent are based on the movement of sand.

The discussion found on page III-2 and the information presented in Figure III-3 of the DEIS show that sand is not the predominant surface sediment found in the lease sale area. Finer grained silt and clay are more prevalent. Silt and clay particles generally settle over a longer period and a larger area than do sand particles. Thus, using the temporal and spatial data from other areas where sand is the predominant sediment is not representative of the site-specific conditions. This approach could tend to minimize the temporal and spatial extent of the effects of dredging on water quality.

5-53

Effects of Drilling Effluent Discharges:

One of our major concerns with past lease EISs has been the quantity of muds and cuttings that would be recycled and subsequently discharged during development/production. The FEIS should clarify and discuss the recycling rate used for this EIS. A range of 20 to 80 percent (as found in the sale 109 Chukchi Sea preliminary water quality discussion) seems reasonable. This range of mud recycling rates represents a realistic approach considering the many contingencies that could result in less than optimum mud usage during the development of arctic fields.

5-54

The discussion in this section should also focus on the total quantity of drilling muds discharged during development rather than on the decreased quantity of drilling muds used per well during development. There will be an increase in total quantities of muds discharged during development compared to total mud discharge during exploration. This should be discussed in the FEIS.

5-55

The discussion about the discharge of cuttings compares the cuttings to natural sediment loading and implies that there will be no effect. Again, it is difficult to separate water quality effects from their associated biological effects. This approach appears to ignore that most of the natural sediment load is inshore of the potential discharge locations associated with this sale. Second, the cuttings grain size distribution should be compared to the grain size distribution associated with natural sediment. A difference in grain size distribution can have a major effect on benthic communities. Finally, the natural sediment load will have a certain amount of organic matter associated with it. Cuttings will not have significant quantities of organic matter. The organic matter content can be of critical importance to infaunal communities.

5-56

Formation waters are prohibited from being discharged in marine waters less than ten meters deep by the existing Beaufort Sea General NPDES Permit. Formation waters represent a potential source of hydrocarbon and heavy metal contamination. The volume of formation waters is an unknown (20-150 percent of the oil output volume) and represents a major concern if discharge occurs in shallow water.

5-57

The effects of production discharges (p. IV-B-120) have not been evaluated by EPA through the Ocean Discharge Criteria Evaluation (ODCE) process. These discharges are not planned to be included in any general NPDES permit in the future. They would receive individual permits after site-specific ODCEs have been completed.

5-58

Air Quality

We believe that air quality is an important issue for this lease sale. This is due to the likely high industry interest, the large number of on-going projects in and adjacent to the lease sale area, and the large number of unknowns regarding potential environmental effects on this sensitive arctic area.

We would prefer to see the results from air quality modeling presented in the FEIS. MMS went through extensive efforts to develop the OCD model and gain EPA approval of it. It should be used to model the worst-case air emissions for the more conventional pollutants. We understand that the applicability of the OCD model to the arctic climate is less than optimum. It is however an available tool that can be used for impact analysis.

5-59

The inert pollutant air quality modeling results (using MMS's Offshore and Coastal Dispersion model) should be presented in the FEIS for the cumulative case. The assumption could be made that both potential platforms are in the same block and three miles offshore as a worst case scenario. If the modeled onshore impacts are insignificant, there is no problem. If impacts are significant, appropriate caveats can be stated (such as platforms may be further offshore, controls can be applied to reduce emissions, etc.). The OCD model is inexpensive to use and can be run with readily available input data.

5-60

The VOC emissions on Table IV-B-5 appear high, and they could be of some consequence. The impacts of elevated VOC levels should be discussed in the FEIS. Modeling of the VOC emissions cannot be accomplished with the OCD model, nor would it be a simple analysis. We are available to work with you on the VOC issue to determine if there is an acceptable model that could be used. The model results could be used to better define and examine potential impacts.

5-61

Based on the results of the OCD model and perhaps a more extensive VOC analysis, it may be appropriate to develop an ambient air quality monitoring program, perhaps in the form of a leasing stipulation. Onshore air quality monitoring stations may be essential to establish existing air pollutant concentrations for the shore areas before significant OCS development occurs. These stations could also be used to track potential air quality degradation during and after development.

5-62

On page IV-H-3, in the air quality section under "Unavoidable Adverse Effects," the statement is made that "MODERATE degradation of air quality..." is expected from the proposal. Only "MINOR" air quality degradation is mentioned in Section IV-B-15, "Effects on Air Quality." This inconsistency should be corrected.

5-63

The potential long term effects of burning oil spills, and acidification damage to tundra from atmospheric sulfate deposition should be discussed on page IV-J-1 under "Relationship Between Local Short-Term Uses and Maintenance and Enhancement of Long-Term Productivity."

5-64

Throughout the "Effects on Air Quality" section (starting on p. IV-B-124) the term nitrous oxides is incorrectly used. The discussions should instead refer to either oxides of nitrogen or nitrogen oxides. Nitrous oxides refers to "laughing gas" and is of no concern from an air quality standpoint.

5-65

Response 5-1

The approach used in the EIS is to use a systematic method of examining effects on a species or species group from each effect-producing activity (oil spills, noise/disturbance, drilling discharges, etc.) and then examine effects from these activities in the aggregate. With this method, the conclusion for any species or species group can be no lower than the highest rating from any of the effects produced by any individual effect-producing activity. The variety of effect-producing activities are further considered in the oil-spill-risk and the cumulative-case analysis for each resource. Most effect-producing activities are short term, localized, and usually not additive; therefore, they are not "synergistic." Also, the probability of any two effects occurring at the same time and at the same place and to the same individuals in the population is extremely remote. "Synergistic" as well as "antagonistic" effects have been documented with some heavy metals and the combination of heavy metals and organic chemicals using lower-trophic organisms in controlled laboratory experiments. Quantitative potential synergistic effects with upper-trophic organisms in which two activities have a greater than additive effect have not been documented. Without more specific direction from the commenter, the present EIS methodology in determining effects should be more than adequate.

Response 5-2

The analysis of the effects of the proposed action is based on estimated scenarios that are as extensive and as up-to-date as can be made in advance of a lease sale; Tables II-A-1 and IV-A-1. These scenarios are associated with a mean-case resource estimate of 650 million barrels of oil for that part of the Sale 97 planning area offered for lease. Major current and proposed oil and gas projects are considered in the cumulative-effects assessment and are summarized in Table IV-A-7. We do not understand what is meant by representative.

Response 5-3

Conditional probabilities are tabulated in Appendix F and are prominently presented and discussed in Sections IV.A.1.c and IV.A.2.b. A conditional probability--the probability of contact with a resource target, assuming that a spill occurs at a specific location--is most useful in identifying which location is or is not contributing to the combined probability of oil-spill contact with a resource. However, conditional probabilities do not provide an estimate of the likelihood of resource contact with oil; conditional probabilities only indicate what habitat would be contacted if a spill occurred at a specific launch location. For example, placing a hypothetical launch point within a resource target creates a conditional probability of 100 percent that the resource target would be contacted by a spill occurring at the encircled launch point, regardless of how likely or unlikely spill occurrence at that location would be. An extensive modeling effort is not needed to conclude that if a spill occurred at a specific location it would contact that location, and such a conclusion would not provide meaningful information to a decisionmaker.

1

Response 5-4

Final results from the bowhead feeding study conducted in the eastern Alaskan Beaufort Sea should be available by June 1987. This will not allow time for their incorporation into the FEIS; however, the information will be available to the Secretary of the Interior prior to his decision on the lease sale.

Response 5-5

The MMS disagrees with the EPA's rating on this EIS regarding both the methods used to reach a rating and the statements made concerning the adequacy of the EIS. There is only one Federal standard on EIS adequacy--the CEQ Regulations. The criteria for an EIS in those regulations govern what needs to be considered and how it needs to be considered to be objective, complete, and adequate for decisionmaking.

This EIS has revealed the substance of likely environmental effects, has analyzed in depth the relevant facts, and has drawn from them realistic assessments of the degrees of effect considered potentially possible. The philosophy of the analyses is to emphasize a conservative approach to ensure that the outcomes are fully evaluated. These analyses consider regional and localized effects, which are gauged by an objective system (defined in advance) on a scale consistently applied. When the MMS receives a substitute analysis for a potential effect that can be rigorously, consistently, and objectively applied, we will give it full and objective consideration and use it if the facts warrant. Meanwhile, we do not share EPA's view that this EIS is "inadequate."

Response 5-6

This concern is addressed in Responses 2-1, 6-2, 6-3, and 21-11.

Response 5-7

Information on benthic invertebrates and fishes in the northeastern Chukchi Sea is presented in the DEIS, and additional information has been added to Sections III.B.1. and .2.

Response 5-8

The 97 EIS does provide site-specific information on important habitats of marine and coastal birds and marine mammals in the Chukchi Sea on Graphics 3 and 4. The information that is presented for the Beaufort Sea environment is more specific because the proposal would have more local effects on birds and mammals along the coast of the Beaufort Sea than in the Chukchi Sea.

The biological populations of birds and marine mammals of the Beaufort Sea and the northern Chukchi Sea are not only similar but for the most part are the same migratory populations. As expressed in Response 5-7, additional information concerning lower-trophic and fish resources in the northeastern Chukchi Sea has been added in Sections III.B.1 and .2.

2

Response 5-9

This concern is addressed in Response 21-39.

Response 5-10

Further discussion of fish species and their local availability has been added to Sections III.C.3.b(1)(g), (2)(g), (3)(g), and (4)(g) to provide additional information for the analysis of subsistence harvest of fish.

Response 5-11

This concern is addressed in Response 21-37.

Response 5-12

This concern is addressed in Response 21-38. The discussion in both Sections III.B.2 and IV.B.2 talks about use of nearshore waters by both adult and juvenile anadromous fishes, but this discussion has been enlarged.

Response 5-13

A more detailed discussion of the importance of the coastal habitats is made in Section III.B.2. Recent information on feeding habits of anadromous fishes is discussed, but no detailed energy budgets are available.

Response 5-14

This concern is addressed in Response 5-4.

Response 5-15

Pertinent information on the population dynamics of polar bears in the Beaufort Sea is discussed in Section III.B.4.b. The percentage of polar bear dens located in the Beaufort Sea region from 1983 to 1985 was 78 percent, not 87 percent (Armstrup, 1985). Sale 97 is very unlikely to result in a significant loss of polar bears or measurably reduce polar bear reproductive rates, regardless of whether the population is in equilibrium and/or natural recruitment. Under the proposal, only 15 exploration drilling units (a maximum of 3/year) and 2 production platforms would be located in offshore sea-ice habitat used by denning female polar bears. These dens are widely and sparsely distributed over thousands of square kilometers of sea-ice habitat. The OCS drilling units and platforms and associated winter industrial activities would disturb only a very small number of female polar bears and cubs (probably less than six females) that happen to be denning within 1 or 2 kilometers of the platforms. Winter air traffic to and from support facilities and the platforms would not disturb other denning polar bears along the air-traffic routes because the noise would not be audible from inside the dens. Thus, only a few females and cubs are likely to be disturbed by the proposal. The possible loss of the few cubs due to disturbance of the females and subsequent abandonment of a few dens near the drilling units or platforms are not likely to represent a long-term effect on the polar population even in an equilibrium population (births equal to deaths). The polar bear population at "equilibrium" (there is no such thing as a true equilibrium population

in nature) will still vary naturally in recruitment (births) and in mortality (deaths) rates by more than the few polar bear cubs that may be lost due to disturbance associated with the proposal. In other words, the loss of a few polar bear cubs due to noise-human presence at or near the offshore exploration and production facilities would not represent a measurable effect (population loss) over and above the natural variation, even in an "equilibrium" population.

Response 5-16

Section III.D.5 has been amended to address this concern.

Response 5-17

This concern is addressed in Response 5-1.

Response 5-18

This concern is addressed in Response 5-1.

Response 5-19

The EIS is written to analyze the effects that the proposed action and the alternatives might have on the environment. The analyses of the proposed action are based on the mean-case resource estimates and corresponding hypothetical set of scenario conditions for exploration and development and production. The elements of the scenarios are based on the types of activities, facilities, and strategies that have been, or may be, used to exploit the petroleum resources in the Beaufort Sea and northern Alaska, other Arctic areas, and other marine environments.

The analyses of the deferral alternatives and the minimum and maximum cases are based on variations in the resources estimates and associated scenario conditions.

Response 5-20

The EIS has focused on the effects associated with the cumulative case; and the effect levels for the cumulative case were determined. In order to make this cumulative-case determination, it is necessary to also fully develop the proposed action and determine the level of effect associated with this action and the decision options.

Response 5-21

Conditional probabilities can only be used to estimate the probability of target contact if a spill occurred at a specific, hypothetical launch point (see also Response 5-3). Responses to specific points raised by the commenter follow:

* The conditional probability is not "risk" to a resource. Risk involves estimating the likelihood of spills occurring, of such spills contacting the habitat of that resource, and of what damage would occur to the resource if the habitat were contacted.

* Conditional probabilities cannot be used to estimate which targets are most likely to be contacted by spilled oil. Only combined probabilities provide this information. The highest conditional probabilities, greater than 99 percent, indicate only that the hypothetical spill point in question is within the target area. That is, the probability of a spill contacting the target area is high because the spill is assumed to have occurred within the target area. The EIS reviewer should place little emphasis on this obvious tautology.

* Seasonal conditional probabilities cannot determine the season that targets are most likely to be contacted by oil in the Beaufort Sea. About 79 percent of oil production and, therefore, spill risk would occur during the the 9.5 months of oceanographic winter. Obviously, any valid estimate of whether spills are more likely to contact a resource in summer than in winter would have to take into account that spills would occur with fourfold less frequency in summer than in winter. Combined probabilities, but not conditional probabilities, take this factor into account.

* Both combined and conditional probabilities are used to evaluate the relative merits of deferral alternatives in the EIS. Combined probabilities are used to estimate the likelihood of contact with spills, and conditional probabilities are used to verify the point of origin of such spills.

Response 5-22

This concern is addressed in Response 5-3.

Response 5-23

The approach used in the oil-spill-risk analysis for Sale 100 was developed specifically to handle a timeframe for ice-oil interactions that is unique to the northern Bering Sea. In the Beaufort Sea, the winter conditions persist longer, and a spill frozen into the ice in October could persist into summer. Seasonal probabilities would ignore this extra risk. The "open-water season" probabilities emphasized in the Sale 97 EIS include both winter spills that persist into summer and spills that occur in summer.

Response 5-24

This concern is addressed in Responses 5-3 and 5-21.

Response 5-25

The combined probabilities assess the likelihood of a spill occurring and contacting a resource target. The effects analyses in Sections IV.B through IV.I evaluate the potential effects of such contact on individual resources. Conditional probabilities provide no useful information on the level of effect that would occur if a spill contacted resource habitat, and the limited information contained in conditional probabilities about the likelihood of spill contact has already been used in the calculation of combined probabilities.

Response 5-26

Conditional probabilities can be used only to estimate the likelihood that, if a spill occurred at a specific location, it could contact specific areas of ocean or shoreline. An estimate of risk to a resource in that area of ocean or on that shoreline requires evaluation of whether the resource itself would be contacted and what damage such contact would cause. See also Responses 5-3 and 5-21.

Response 5-27

This concern is addressed in Response 21-39.

Response 5-28

This concern is addressed in Response 21-37.

Response 5-29

This concern is addressed in part in Response 21-38. Effects to multiple age classes are discussed in Section IV.B.2, with emphasis on the more abundant anadromous fishes. The importance of the coastal habitat to anadromous fishes was discussed in both Sections III.B.2 and IV.B.2.

Response 5-30

Although some of these effects are already discussed in Section IV.B.2, the discussion of sublethal effects has been expanded.

Response 5-31

The definitions of level of effect deal with two scales, temporal and spatial, both expressed in terms of populations. A MODERATE effect is not based on the assumption that only one year-class would be greatly reduced. Rather, it is predicated on a change in the distribution or abundance of a portion of a regional population that lasts for more than one generation. This could encompass effects to multiple age classes within a population.

Response 5-32

The potential effects of construction activities on fishes are discussed in Section IV.B.2. The commenter is also referred to Responses 21-49 and B-7. As detailed in Response 21-49, causeways are not expected to be built for Lease Sale 97.

Dredging activities that could affect the overwintering habitat of anadromous fishes (in freshwater channels and delta areas) would be regulated and permitted by the U.S. Army COE, EPA, and the State of Alaska. The duration of such activity is expected to be on the order of a few days or less for a particular site (see Response B-7). Since the projected landing points for Sale 97 offshore pipelines are Point Belcher (in the Chukchi Sea) and Oliktok

Point, little effect on overwintering habitat is expected. Because the potential effects of such activities are so site-specific, it is more appropriate to regulate and mitigate potential effects in the development and production phase.

Response 5-33

Section IV.B.5.b has been amended to address this concern.

Response 5-34

Section IV.I and Table II-C-1 have been amended to address this concern.

Response 5-35

Final reports from studies to assess the behavioral responses of bowhead whales to drilling activities and bowhead feeding in the eastern Alaskan Beaufort Sea will not be available in time to incorporate them in the FEIS. The study on the effects of drilling activities on bowhead whales will add some new data, but by looking at activities of two drillsites in a single year, the study will by no means provide definitive answers. The MMS believes that information regarding bowhead reactions to drillship noise collected in the Canadian Beaufort Sea and preliminary information regarding the bowhead migration past drillship operations in the Alaskan Beaufort Sea during 1986 is adequate to assess the potential effects on bowheads of drillship operations resulting from this lease sale. Furthermore, the final report on behavioral responses of bowhead whales to drilling activities should be available prior to the Secretary's decision on the lease sale. Likewise, the feeding study report should be available to the Secretary prior to the date of his decision on the lease sale.

Response 5-36

Although there have been few studies of offshore fishes in the Beaufort and Chukchi Seas, the available data suggest that these fishes are not very vulnerable to pronounced effects due to oil-related activities. The broad distributions of most of the species combined with the small area expected to be affected by a spill imply that only a portion of a population would be affected, hence the determination of a MINOR effect. More details are presented in Section IV.B.2.

Response 5-37

There is no conflict in conclusions between the ANWR LEIS conclusion on effects on polar bears and the 97 DEIS conclusion on polar bears. The definitions of a MODERATE effect level are different.

The concern about polar bear population equilibrium is addressed in Response 5-15.

Response 5-38

Deferral would reduce the risk of oil spills in the spring-migration corridor but would not eliminate it since oil may be transported through the area via ship or pipeline.

Response 5-39

The Barrow Deferral may not eliminate but would reduce (1) activity in the high-density seabird-feeding area near Point Barrow and (2) noise and disturbance effects in the Plover Islands and Peard Bay areas.

Response 5-40

This concern is addressed in Response 5-35.

Response 5-41

The Kaktovik Deferral would not eliminate but would reduce oil-spill risk and disturbance of birds and marine mammals from Kaktovik east to Demarcation Point; see Sections IV.F.3 and 4.

Response 5-42

The consideration stated was addressed in the DEIS in the assessment of potential effects to bowhead whales in Section IV.F.5.

Response 5-43

This concern is addressed in Responses 2-1, 6-2, 6-3, and 21-11.

Response 5-44

Section IV.F.5 addresses this concern. Since leases have already been granted adjacent to the proposed deferral area, aircraft and vessel traffic enroute to leased blocks through the deferral area could disturb bowhead whales. Also, oil spilled while being transported through the deferral area or spilled on adjacent leased blocks could affect bowhead whales within the deferral area.

Response 5-45

Section IV.B.14.a has been amended to address this concern.

Response 5-46

Changes in water temperature and salinity patterns are not predicted to result from activities associated with this lease sale; therefore, these types of changes are not discussed in relation to fish. Other potential changes identified (e.g., the discharge of drilling fluids) are discussed in Section IV.B.2.

Effects on water quality for the proposal are analyzed in Section IV.B.14.

Response 5-47

Section IV.B.14.a has been amended to address this concern.

Response 5-48

Section IV.B.14.a has been amended to address this concern.

Response 5-49

Section IV.B.14.a has been amended to address this concern.

Response 5-50

Section IV.B.14.a has been amended to address this concern.

Response 5-51

The "policy" is that of NEPA, not MMS. The conclusion on effects on water quality is based on what is expected to occur. A spill of 100,000 barrels or greater is not anticipated to occur as a result of Sale 97. The likelihood of contact with such a spill and what the effects of spill contact would be--for water quality or otherwise--are separately estimated in the EIS (Sec. IV). However, to base estimates of effects on a remotely possible, extreme event is contrary to NEPA requirements. The NEPA requires that extreme events of low probability, but possibly higher effect, be analyzed and that the probability of occurrence be stated--the resulting possible but unlikely effects must be stated but are not required to be factored into bottomline estimates of effects.

Response 5-52

Additional information on effects of dredging and gravel-island construction are provided in the incorporations by reference cited in Section IV.B.14. Further discussion of effects found to be NEGLIGIBLE is not warranted in the text.

Response 5-53

The empirical data discussed in Section IV.B.14 are for both muddy and sandy bottoms. This has been clarified in the text.

Response 5-54

The estimates of muds and cuttings used in Section IV.B.14.a are those provided in the Exploration and Development Report for Sale 97 (USDOI, 1985a,c; 1987) and are the same as those agreed to and used by EPA in their analysis of muds and cuttings in Appendix L.

Response 5-55

Both rates of discharge and total quantities of discharged muds and cuttings are discussed in Section IV.B.14.a. Discharges are short-term events. They last at most for a few hours, and with discharge plumes they are detectable

for no more than a few hours after discharge ceases. Therefore, effects on water quality are also short term, and rates of discharge are more important than the total quantities discharged over the life of the field. Note that discharges of muds and cuttings during field development are estimated to be less than an order-of-magnitude greater than for the exploration discharges, which EPA has already determined are not likely to exceed water-quality criteria at a distance of 100 meters or more from the discharge (Appendix L).

Response 5-56

A detailed discussion of the effects of muds and cuttings on water quality is contained in Appendix L. That information, plus information on expected total quantities discharged, maximum rates of discharge, existing legal limitations on discharge, and empirical studies of the results of discharge provide the basis for the analysis of effects of these discharges on water quality. Additional discussion of settling rates and grain size beyond that already contained in Appendix L and explicitly included in the discussed empirical studies in Section IV.B.14 is not warranted, particularly in view of the NEGLIGIBLE to MINOR effect of mud and cutting discharges on water quality.

The commenter is referred to Section IV.B.1 for an analysis of the effects of muds and cuttings on benthic biota.

Response 5-57

The Beaufort Sea General NPDES Permit applies only to exploration discharges of formation waters in the areas offered by past OCS sales. Sale 97 would be the first offering for part of the Sale 97 area. The EPA states in their next comment that no Ocean Discharge Criteria Evaluation (ODCE) has been done for production discharges and that such discharges would not be covered under any general NPDES permit. It would be premature to assume that EPA would prohibit formation-water discharges in less than 10 meters of water during production prior to their completion of an ODCE for that discharge.

Response 5-58

The effect on water quality of deliberate discharges during production is analyzed in Section IV.B.14.a. Adequate information on production discharges is available to assess potential effects on water quality; that EPA has not yet performed its ODCE process does not impair the analysis in the EIS.

Response 5-59

The EIS includes adequate information and analyses, based upon anticipated resources on equipment emissions, to demonstrate that the potential effects on air quality are MINOR. The necessary information is being assembled to use the Offshore and Coastal Dispersion (OCD) model for Alaska. However, the analysis in the EIS is more conservative (more pollutants) than OCD model results in that the analysis assumes constant onshore winds. The model, with variable winds, would demonstrate even less effect. Consequently, the results of the analysis, including consideration of existing emission-control measures, are adequate to support the conclusions.

Response 5-60

The OCD model results will likely be less conservative for the cumulative case (demonstrate less effects) than the analysis in the EIS text. The air-quality analyses made for prior Beaufort Sea lease sales also used the same conservative assumptions, which are that exploration, development, and production would be concentrated 5 kilometers from the shore and that winds would be constantly onshore. The addition of potential emissions from these analyses results in highly conservative emissions estimates for the cumulative case. In addition, the projected cumulative amount of oil resources for the U.S. Beaufort Sea is now less than either of the individual mean-case resources proposed for Sales 71 or 87. This effectively reduces emissions below previous cumulative-case estimates. Consequently, the air-quality analysis in the EIS for the cumulative-case effects is adequate to support the conclusion.

Response 5-61

Section IV.B.15.a(1) has been amended to address the concern with volatile organic compounds. Volatile organic compounds are a hydrocarbon component of photochemical pollution that forms primarily in periods of intense sunshine and can be trapped by atmospheric inversions and topography. In the Beaufort Sea, the winter months are completely dark. There is little topography, and winds interrupt the occasionally intense inversions. During the summer, inversions are less frequent and winds persist. Consequently, photochemical pollution is unlikely to form and linger. In addition, the projected emissions of volatile organic compounds could be reduced by 50 to 95 percent using existing control technologies. Although it is possible that remaining potential emissions could exceed the exemption level, it is very unlikely because this assumes that facilities will be clustered 5 kilometers offshore. It is very likely that facilities will be scattered and farther offshore. In any event--in order to ensure meeting air-quality standards at the shoreline--additional information and, if necessary, modeling and emission controls will be required of operators before they begin offshore activities.

Response 5-62

The information in the EIS uses available onshore (including shoreline) air-quality-monitoring information from analyses developed in support of Alaska Department of Environmental Conservation air-quality permits for the Prudhoe Bay area. Onshore air-quality monitoring is the purview of the EPA and the Alaska Department of Environmental Conservation. However, MMS would be willing to advise on monitoring station locations. The MMS collects offshore air-pollutant-emissions information from operators pursuant to Federal Regulations 30 CFR 250.34-3(a)(4), to the extent necessary to make air-quality-effects determinations under 30 CFR 250.57.

Response 5-63

The text in Section IV.H.14 has been corrected to eliminate the inconsistency. Because of an oversight, the word "MODERATE" should have been "MINOR" and has been changed accordingly.

Response 5-64

Adequate information is presented in the EIS to demonstrate that the effects of burning oil spills and sulfate deposition on the tundra would not be long term. Based upon cited observations, it is demonstrated that the effects of soot from a burning oil spill would be short term, widely dispersed, and likely to be quickly diluted by precipitation, and therefore unlikely to harm the tundra. Sulfate deposition from emissions from offshore operations would be so widely scattered as to make a significant effect unlikely. In general, the increased air pollution from the proposal would be limited to the life of the oil field and would meet the air-quality standards that are designed to protect human health and long-term productivity.

Response 5-65

The text in Section IV.B.15 has been corrected to change "nitrous oxides" to "nitrogen oxides."

MARINE MAMMAL COMMISSION
1625 EYE STREET, N.W.
WASHINGTON, DC 20006

6 January 1986

Mr. Alan D. Powers
Regional Director
Minerals Management Service, Alaska Region
U.S. Department of the Interior
949 East 36th Avenue
Anchorage, Alaska 99508-4302

Dear Mr. Powers:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the "Beaufort Sea Sale 97 Draft Environmental Impact Statement" and offers the following comments and recommendations.

GENERAL COMMENTS

The Draft Environmental Impact Statement (DEIS) provides an assessment of possible impacts from a proposed action to lease up to 3,930 blocks (approximately 8.58 million acres) of submerged OCS lands in the Beaufort and Chukchi Seas off the North Slope of Alaska for the purpose of oil and gas exploration and development. It also assesses the possible effects of six alternative actions and provides information on eight species of marine mammals likely to occur in the proposed sale area, including two species of endangered whales (i.e., bowhead and gray whales). It concludes that possible effects on endangered and non-endangered marine mammals as a result of the Proposed Action are likely to be minor and that cumulative effects of offshore oil and gas exploration and development on endangered whales are likely to be moderate. Consultations with the National Marine Fisheries Service, as required under section 7 of the Endangered Species Act, on the effects of the proposed action on endangered whales were initiated on 10 July 1985, but the results of those consultations were not available at the time that the DEIS was prepared.

The DEIS provides a reasonably thorough review of information on the abundance and distribution of marine mammals in the sale area and considers many, but not all possible impacts of the proposed action. It also provides information indicating that oil spills are not likely to occur and contact large numbers of endangered or non-endangered marine mammals and, in some cases, concludes or implies that the proposed action would therefore have a negligible or minor impact. While there may be a low probability of an oil spill occurring and directly affecting large

numbers of marine mammals, it does not necessarily follow that impacts which could occur would be minor. As discussed below, there are a number of uncertainties concerning potential effects of oil spills and disturbance which could result in impacts ranging from minor to major. Some potential impacts are difficult or impossible to identify or assess from available information and the Commission recommends that the FEIS acknowledge this and clearly indicate when possible impacts have been judged to be negligible or minor because of the low probability of occurrence.

6-1

With respect to potential impacts, the DEIS should be modified, as discussed below, to consider: a) the possible effects of garbage disposal practices from platforms on polar bears; b) the possibility that oil spills, disturbance, etc. will cause walrus, polar bears, ice seals or other species to move to adjacent and already occupied areas increasing animal densities in those areas to levels which will damage or deplete food supplies; and c) the possible cumulative effects of subsistence harvesting and other activities, as well as oil and gas exploration and development on bowhead and beluga whales, polar bears, walrus, and seals.

The DEIS also identifies a number of potential mitigating measures including: stipulations for an orientation program, the protection of biological resources, and seasonal drilling restrictions for protection of bowhead whales; and "information to lessees" notices on bird and marine mammal protection, areas of special biological and cultural sensitivity, the Beaufort Sea Biological Task Force, subsistence whaling and other subsistence activities, and endangered whales. These measures would help reduce potential impacts associated with the proposed lease sale and the Commission recommends that they be incorporated with the modifications discussed below as part of the proposed and alternative leasing actions.

Because of the uncertainties noted above and discussed below, the Commission also recommends that the Minerals Management Service consider the possible utility of developing and implementing monitoring programs aimed at detecting possible unforeseen impacts before these impacts can reach unacceptable levels. Some potential impacts, as noted earlier, are difficult or impossible to identify and assess using available information. In some cases, it could be excessively costly and time consuming, if not impossible, to obtain the information required for accurate impact assessment prior to initiating exploration and development. Such situations could lead to adverse environmental impacts, and/or delay exploration and development, and might be avoided at least in part by developing and implementing monitoring programs to identify possible unforeseen impacts in time to take remedial steps to assure that they do not reach unacceptable levels.

6-2

SPECIFIC COMMENTS

Pages I-1 to I-5, Leasing Process: This section identifies the steps considered as part of the leasing process for the proposed sale. Step number 6 ("preparation of Draft Environmental Impact Statement") notes the importance of the Minerals Management Service's Alaska Environmental Studies Program with respect to the preparation of the DEIS and refers the reader to a description of that Program in Appendix D. The Environmental Studies Program also is an important source of information for other identified steps in the leasing process and, to appropriately identify its role, either the section should be expanded to list and describe the role of the Environmental Studies Program as a separate step, or its role should be discussed under each of the other relevant steps already described (e.g., the leasing schedule, area identification, scoping, endangered species consultations, etc.).

6-3

Pages II-12 to II-26, Potential Mitigating Measures: This section identifies a number of "potential stipulations" and "information to lessees" notices which are intended to reduce potential impacts on various resources including marine mammals. The potential stipulations include, among others, measures for: an orientation program; protection of biological resources; and seasonal drilling restrictions to protect bowhead whales. The Notices to lessees include, among others, those which provide information on: bird and marine mammal protection; areas of special biological sensitivity; the Beaufort Sea Biological Task Force; subsistence whaling; and endangered species. Such measures would help to avoid or reduce potential impacts on marine mammals and the ecosystems of which they are a part and the Commission recommends that they be modified as discussed below and incorporated as part of the Proposed Action and other leasing alternatives.

One of the most important steps that can be taken to ensure that the environment and other resources are not adversely affected is to ensure that the lease manager (the Regional Supervisor, Field Operations) has the information necessary to make informed decisions with respect to the possible effects of lease operations. This need is identified in section 20 of the Outer Continental Shelf Lands Act, which requires the Secretary of the Interior to conduct environmental studies, including post-lease sale monitoring studies as may be necessary to obtain information pertinent to sound leasing decisions and for the purpose of identifying significant post-lease sale changes in environmental conditions. Specific research and monitoring needs are also identified in the Biological Opinion prepared by the National Marine Fisheries Service and included in Appendix J of the DEIS.

The Minerals Management Service's Regional Environmental Studies Program, which addresses these requirements and needs, has provided and should continue to provide information essential for predicting, detecting and mitigating potential environmental impacts. If such a program were not in place for the sale area

6-3

during the period of post sale activity, the likelihood of detecting and correctly attributing causes to unforeseen environmental effects, particularly long-term incremental impacts that are difficult to predict, will be significantly reduced. Although certain possible monitoring activities are identified with respect to potential stipulations and "information to lessees" notices identified in this section of the DEIS, a management related monitoring and studies program is not identified as a required or potential mitigating measure here or elsewhere in the DEIS.

The Commission, therefore, recommends that this section of the DEIS or the preceding section entitled "Mitigating Measures That Are Part of the Proposed Action" be expanded to identify and describe the roles of the Service's Alaska Environmental Studies Program and the lessee during the post-lease sale period in ensuring that lease managers are able to detect and mitigate possible unforeseen effects. In this regard, the DEIS should identify the steps that will be taken to ensure that the requisite monitoring program is identified and in place during the course of field development and production.

Pages II-16 to II-19, Stipulation No. 4, Seasonal Drilling Restriction for Protection of Bowhead Whales from Potential Effects of Oil Spills: This Stipulation would minimize possible effects of disturbance, noise, and drilling muds as well as oil spills on bowhead whales. We therefore suggest deleting the words "from the Potential Effects of Oil Spills" from the title.

6-4

Pages II-20 to II-22, Information on Bird and Marine Mammal Protection: This section of the DEIS provides information on requirements and guidelines for protecting certain wildlife resources. The second sentence of the fourth complete paragraph on page II-21 refers to "Notice to Lessees No. 84-3," which specifies performance standards to be followed during the conduct of preliminary activities on a lease. We are not familiar with the terms of this Notice and request that a copy of this and other Notices related to marine mammals be sent to us. In addition, if it is not already included in either this Notice or the Orientation Program required under Potential Stipulation No. 2, provisions should be made to advise oil industry personnel and their contractors of the penalties as well as the performance standards associated with laws pertaining to bird and marine mammal protection.

6-5

Page II-22, Information on Areas of Special Biological and Cultural Sensitivity: This Notice advises lessees of certain areas of special biological sensitivity. If it has not already been done, the Commission recommends that the Minerals Management Service consult with the Fish and Wildlife Service and the National Marine Fisheries Service to ensure that all areas of special biological importance to polar bears, seals, and beluga whales have been identified and included on the list in this

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Notice. The Notice should also be expanded to note that these areas should be targeted for special measures to minimize or restrict possible disturbance associated with noise and construction activities.

Pages II-24 to II-25, Information on Subsistence Whaling and Other Subsistence Activities: This Notice advises lessees of the location and timing of subsistence whaling activities along Alaska's North Slope. It should be expanded to provide similar information concerning the subsistence take of polar bears, beluga whales, bearded seals, and other species of importance to Alaska Natives.

Pages III-24 to III-27, Pinnipeds, Polar Bears, and Beluga Whales: This section provides a useful review of information regarding population size, distribution, and reproductive patterns of certain marine mammals which occur in the leasing area. To indicate the relationships among these and other components of the Beaufort Sea food web, it would be useful to include a schematic diagram of the principle components of the food web.

Page IV-B-34, fourth paragraph: The marine mammal population estimates cited in the first sentence of this paragraph appear to be for all of Alaska rather than for the proposed sale area in which the species "commonly occur year-round or seasonally."

Page IV-B-35, second complete paragraph: This one sentence paragraph states that a study of oil effects on dolphins provides "sufficient insight" on potential effects of oil spill contact on beluga whales. Transferring the results of studies on one species to another species is subject to great uncertainty. It therefore is questionable whether the insight is sufficient and the word "sufficient" probably should be deleted.

Page IV-B-36, second complete paragraph: This paragraph notes that ringed, spotted and bearded seals, walrus and beluga whale are capable of moving from an area of local prey depletion resulting from an oil spill to other unaffected locations where prey are abundant. While the capability no doubt exists, the DEIS fails to consider what would happen if the unaffected areas already were inhabited and the influx of additional animals resulted in densities above carrying capacity and depletion of food supplies in those areas as well. It should be noted that such a shift in species distribution could stress remaining food resources and result in a general decrease in carrying capacity which could precipitate a regional population decline.

Page IV-B-37, third complete paragraph: This paragraph concludes that the one time loss of 20-30 polar bears due to an oil spill is likely to represent a minor impact. If polar bear populations are declining or stabilized at low levels because of subsistence hunting or other sources of mortality, the loss of this number of bears, particularly if all or most were females, could have more

than a minor effect. The paragraph should be revised to better reflect the potential range of impacts on polar bears.

Page IV-B-38, Effects of Noise and Disturbance: This section should be expanded to note that disturbance of seals, polar bears, and beluga whales by exploration and development activities could result in site avoidance by individuals of one or more species. As noted above, this could, in turn, result in increased pressure on limited food resources in those areas into which displaced animals move. For this reason, it should be noted that potential impacts on polar bears and perhaps beluga whales and seals could range from negligible to moderate rather than minor.

Page IV-B-42, Effects of Offshore Construction: This section discusses the effects of constructing offshore drilling platforms. Food scraps and other trash generated by workers during construction, as well as operation of these platforms, could attract polar bears. Such attraction could result both in death or injury of workmen and in some bears being shot as nuisance animals. This section should be expanded to discuss these potential effects.

Pages IV-B-43 to IV-B-44, carryover paragraph: The sentence beginning on the bottom of page IV-B-43 notes that in the event of a severe oil spill, contamination of benthic food sources and feeding habitats could reduce winter survival of walrus the following year and possibly reduce herd productivity for that year. It should be noted that these effects could be manifested for more than one year or until the food resources recovered to the pre-spill state.

Pages IV-B-44, first and second complete paragraphs: These paragraphs note that noise and disturbance from aircraft and ship traffic servicing drilling platforms could greatly disturb hauled out seals and walrus causing them to charge into the water, that vessel traffic associated with supply boats and icebreakers could temporarily displace or interfere with marine mammal migration and distribution for a few hours to a few days, and that these effects are likely to be minor. The paragraphs should be expanded to note that repeated occurrences of such events could lead to area avoidance by some or all of these species and that the significance of such avoidance could range from negligible to major.

Page IV-B-44, Conclusions: For reasons noted above, something like the following should be added to the end of the sentence: "...however, potential impacts could range from negligible to major."

Page IV-B-44 to IV-B-47, Cumulative Effects: This section should be expanded to consider the effects of subsistence hunting on the abundance and distribution of polar bears, beluga whales, bearded seals, and ringed seals. In addition, for the reasons already noted, the conclusion on page IV-B-45 should be revised to

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indicate that possible cumulative effects are uncertain for these species and they could range from negligible to major.

Page IV-B-48, first paragraph: This paragraph notes that, if bowhead whale habitat is contaminated with spilled oil, there could be a localized reduction in food resources and perhaps a temporary displacement from feeding areas. It should be noted that "a localized reduction in food resources" could have a significant adverse effect if alternative food resources are not readily available or if reduction in one area results in higher predator pressure in other areas. In addition, it should be noted that oil contamination of an important feeding area could induce a long-term avoidance of such an area by bowhead whales.

6-19

The last sentence of the paragraph, which notes that no drilling or nondrilling blowouts greater than 1000 barrels occurred during the period from 1981 to 1983, should be expanded to note that the vast majority of this experience is based on wells drilled in less rigorous non-Arctic environments.

6-20

Page IV-B-49, second complete paragraph: This paragraph notes that it has been suggested that ingested oil may coat the stomach or intestinal mucosa of a bowhead whale, but that "since cetaceans do not drink sea water, it is unlikely that bowheads would ingest the quantity of oil needed to produce toxic effects." The fact that cetaceans do not drink sea water does not preclude the possibility that oil might be ingested incidental to feeding activity. The sentence should be revised to better reflect the likelihood of oil ingestion.

6-21

cc William D. Bettenberg

Pages IV-B-49 to IV-B-50, carryover paragraph: The last sentence of the paragraph notes that "...bowhead whales may be capable of metabolizing and and (sic) excreting polynuclear aromatic hydrocarbons from oil, so it is unlikely that petroleum hydrocarbons would accumulate to harmful levels...". The conclusion does not follow from its premise. The end of the sentence should be changed to read something like "so it is possible that petroleum hydrocarbons might not accumulate to harmful levels...".

6-22

Page IV-B-50, second complete paragraph: Data or reference(s) should be provided to support the conclusion in the third sentence which states that "(d)ischarges of fluids from drilling units and production platforms should not significantly decrease bowhead whale food resources."

6-23

Page IV-B-54, Summary and Conclusion Paragraphs: For reasons noted above, this paragraph should be expanded to note that a "localized" reduction in food resources could have a significant impact, and that it is uncertain whether or not an oil spill in a critical feeding area could result in significant long-term site avoidance by bowhead whales. It should be noted that while the expected impacts on bowhead whales would be minor, the actual impacts could range from negligible to major.

6-24

Page IV-B-54 to IV-B-56, Cumulative Effects: This section discusses cumulative effects of offshore oil and gas activities on bowhead whales. It should be expanded to indicate the possible cumulative effects of subsistence hunting and other human activities as well. If all potential impact sources are considered, the possible cumulative effects on bowhead whales might well be major.

6-25

I hope these comments and recommendations are helpful. If you or your staff have any questions concerning them, please let me know.

Sincerely,

Robert J. Hofman, Ph.D.
Scientific Program Director

Response 6-1

This concern is addressed in Response 21-23.

Response 6-2

MMS has implemented monitoring studies of marine mammals and of trace-metal and hydrocarbon levels in the Beaufort Sea. Further information on the Environmental Studies Program, including monitoring studies, has been added to Appendix D.

Response 6-3

Further discussion of the postlease role of the Environmental Studies Program has been added to Appendix D.

Response 6-4

The MMS agrees with your assessment that the effects of disturbance, noise, and drilling muds on bowhead whales would also be minimized; however, the major concern for which this measure was developed was oil spills. Since we have another mitigating measure for noise effects, we believe the title should remain unchanged.

Response 6-5

Because it is intended for individuals, the Orientation Program should emphasize the positive aspects of informing industry personnel about the biological resources and the community values, customs, and lifestyles of the people in the areas where exploration and development and production activities may occur. The program should not focus on the negative aspects (penalties) of failure to comply with the laws.

The MMS cooperates with those agencies that are responsible for enforcing laws to protect birds and marine mammals but reasonably should not be expected to inform the lessees and their contractors of all applicable performance standards that these agencies have.

Response 6-6

FWS and NMFS, along with other public agencies and private organizations, have the opportunity to contribute information about important biological habitats during (1) the scoping process--Section I.A.5, (2) the review and public hearings on the DEIS--Section I.A.8, and (3) MMS-sponsored Information Update Meetings and Information Transfer Meetings--Section I.A.6.

Also, see Responses 2-15 and 7-7.

Response 6-7

ITL No. 5, Information on Subsistence Whaling and Other Subsistence Activities, focuses on bowhead whaling because of the bowheads' extreme importance to North Slope subsistence and way of life. However, ITL No. 5 does not

ignore the importance of other subsistence activities. It states, "Lessees are therefore advised that operations should be conducted so as to avoid unnecessary interference with subsistence harvests."

Response 6-8

A schematic diagram of the principal components of the food web is presented in Graphic 2. A reference to this food web has been added to the pinniped, polar bear, and beluga whale discussion in Section III.B.4.

Response 6-9

As noted in Section IV.B.4, the population numbers for the six species of nonendangered marine mammals are estimates of the animals that commonly occur year-round or seasonally throughout or in a part of the Beaufort Sea Planning Area. The planning area includes marine mammal habitats of both the Beaufort and Chukchi Seas.

Response 6-10

Extrapolating the results of studies on one species to another is not always subject to great uncertainty. Beluga whales, dolphins, and porpoises are closely related cetacean species. The effects of oil contact on dolphins are applicable to beluga whales.

Response 6-11

The area affected by an oil spill--for example, the under-ice habitat of ringed seals--would be no more than a few square kilometers, even in a severe case, and contamination would involve the displacement of no more than a few seals. This level of displacement would have no effect on the overall seal populations, even in a relatively local area such as Camden Bay. The influx of a few additional seals into unaffected adjacent habitats would not be over and above the natural variation in abundance of seals in the unaffected habitat. Thus, carrying capacity would not be measurably decreased. No measurable shifts in marine mammal-species distribution are likely to occur as a result of an oil spill. The area that would be severely affected or contaminated by an oil spill to the point of causing a food shortage for marine mammals would be very small, and the effect on food-organism numbers would be very temporary (a few days) because of the rapid recruitment of fish and invertebrates from adjacent areas.

Response 6-12

The assertion that all or most of the polar bears killed by one or more spills would be females is an unreasonable assumption even for a worst-case analysis, if it were required. For one or more spills to selectively contact a group of polar bears consisting predominantly of females, the spills would have to occur and contact an area of female denning-concentration sites at the time the bears are leaving the den. Female bears leave the dens in March or April when the spilled oil would still be frozen under or in the ice. Furthermore, there is no evidence that polar bear populations are declining or are at low levels.

MMS is required to determine the effect level of the proposal, not to repeat the full range of possible effects on the resource (NEGLIGIBLE to MAJOR).

Response 6-13

Site avoidance by marine mammals as a result of exploration and development and production activities such as air and vessel traffic would be very short term, lasting a few minutes to no more than a few days (a MINOR effect). The length of displacement would not significantly (measurably) affect the food sources of the displaced animals or food sources of other marine mammals in adjacent areas; therefore, no long-term effects would be expected. Additionally, there has been no documented or observed long-term (several months-years) site avoidance of production facilities by marine mammals in association with oil exploration and development in other areas such as Cook Inlet, Alaska.

See Response 6-12 in regard to the use of effect-level ranges.

Response 6-14

MMS Operating Order No. 7, Pollution Prevention and Control, prohibits the dumping of food scraps and trash that would attract polar bears to the platforms. Although some bears are still attracted to industrial facilities, the number of bears sacrificed due to safety reasons would be NEGLIGIBLE to the population. The Marine Mammal Protection Act of 1972 prevents the taking of polar bears (as defined in the act) by the oil industry in regard to industry operations in the Beaufort Sea without special permits from FWS. The taking of polar bears by other industrial or commercial activities is also prohibited under the Marine Mammal Protection Act. The use of harmless deterrents such as plastic bullets or other measures to avoid interactions and/or encounters between oil workers and bears can be successful.

Response 6-15

Even in a very large oil-spill event, the amount of oil reaching the benthic-feeding habitat of walrus and affecting the clam population would be only a small fraction of the total oil spilled. Thus, the amount of benthic habitat (perhaps a few km²) and number of benthic organisms are likely to be small in comparison to the size of walrus-feeding areas (several hundred to several thousand km²). The remixing and suspending of benthic sediments due to storms and ice scour would disperse the oil in contaminated sediments. Following removal of the oil and contaminated sediments, other benthic fauna would recolonize the areas previously contaminated by the spill within 1 year. Thus, effects on walrus-food sources would not likely persist for more than 1 year. The effect of spilled oil on benthic-organism communities is likely to be MINOR; see Section IV.B.1.a(1)(c).

Also, see Response W-3.

Response 6-16

"Repeated disturbance" of hauled-out walrus and seals along the pack-ice front by aircraft traffic would not result in long-term or seasonal avoidance of the ice front. In the first place, the locations of the ice front and the

walrus change constantly from day to day. Even if each aircraft flight during exploration and development were to disturb some walrus and seals, each incident would disturb different animals on different ice floes. There is no evidence that repeated exposure of seals-pinnipeds to aircraft traffic at an onshore-haulout location causes abandonment of the habitat. Even the killing of seals from airplanes on Tugidak Island in the Gulf of Alaska prior to the enactment of the 1972 Marine Mammal Protection Act did not cause the animals to abandon pupping and haulout sites on the island. Marine mammals do not readily abandon habitat areas, even when they are subject to such severe harassment as the killing of large numbers of individuals of the species.

Response 6-17

This concern is addressed in Responses 6-12 and 6-16.

Response 6-18

The major projects considered in the cumulative-effects assessment of polar bears, pinnipeds, and beluga whales are shown in Table IV-A-7. The effects that subsistence hunting may have on the abundance and distribution of marine mammals are more appropriately assessed by those Federal agencies, such as FWS and NMFS, and State agencies, such as the Alaska Department of Fish and Game, that are charged with management responsibilities for these species.

Also, see Response 6-12.

Response 6-19

The MMS does not believe that a localized reduction in food resources would significantly affect bowhead whales. Perhaps there is some confusion from the lack of quantification associated with the term "localized reduction." As stated in Section IV.B.5.b(1), even a large spill of 10,000 barrels under open-water conditions is predicted to produce a slick which, after 10 days, would cover only 1 to 2 square kilometers of surface area. Therefore, we are talking about an extremely small, localized area. The highest crude oil water-soluble-fraction (WSF) concentration observed in experimental situations or predicted by spill dissolution models was 0.6 parts per million (Thorsteinson, 1984). In experimental tests of crude oil WSF on the euphausiid *Thysanoessa raschii*, a major prey item of bowhead whales, Fishman, Caldwell, and Vogel (1985) generally found that a WSF concentration of 0.6 parts per million would have no effect on most life stages of the euphausiid and that population losses would be minimal, if any. This information combined with the fact that bowhead-food sources are very patchy and transitory leads us to conclude that an oil spill would not have significant adverse effects on the bowhead whale's food resources.

We are unaware of evidence that would indicate that bowhead whales would display long-term avoidance of important feeding areas into which oil is spilled. On the contrary, Goodale, Hyman, and Winn (1981) report that humpback whales, fin whales, and possibly right whales were actively feeding and surfacing in and near slicks from the Regal Sword oil spill, and gray whales migrate semiannually through waters contaminated by natural oil seeps off the California coast.

Response 6-20

Section IV.B.5.b(1) has been amended to address this concern.

Response 6-21

Section IV.B.5.b(1) has been amended to address this concern.

Response 6-22

Section IV.B.5.b(1) has been amended to address this concern.

Response 6-23

Section IV.B.5.b(1) has been amended to address this concern.

Response 6-24

This concern is addressed in Response 6-19. Based on that information, we do not believe a change is needed in Section IV.B.5.b(1).

Response 6-25

An analysis of the effects of the proposed action on the subsistence uses of bowhead whales is in Section IV.B.9. Cumulative effects are discussed in Section IV.B.9.b(3).

STATE OF ALASKA

OFFICE OF THE GOVERNOR

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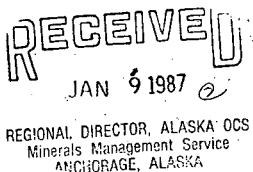
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January 5, 1987

Mr. Alan D. Powers
Regional Manager
Alaska OCS Region
Minerals Management Service
P.O. Box 1159
Anchorage, AK 99510



Dear Mr. Powers:

The State of Alaska appreciates the opportunity to review the Department of the Interior's (DOI) Draft Environmental Impact Statement (DEIS) for the Beaufort Sea Outer Continental Shelf (OCS) Sale 97 planning area. Our comments focus on four aspects of the DEIS including: (1) the proposed action and alternatives, (2) the Section 810 evaluation, (3) the proposed mitigating measures, and (4) the environmental impact assessment. Each of these topics are discussed below.

Proposed Action and Alternatives

The DOI is proposing to offer for lease 3,930 blocks or approximately 21.2 million acres (Alternative I) in the Beaufort and Chukchi seas. The state recommends that the DOI adopt the Barrow Deferral Alternative IV which would defer 201 whole or partial blocks located offshore from Point Barrow. The state will defer making any recommendations on the Kaktovik Deferral (Alternative V) until we have had an opportunity to review and consider the results of various studies addressing bowhead whales in this area. Both of these deferral alternatives are discussed below.

The Barrow Deferral recommendation is consistent with past state policy and could significantly reduce potential impacts to subsistence harvest activities, marine mammals, and waterfowl. The state supported a similar but larger deferral in OCS Sale 37, and recently reemphasized its support for deferrals around Point Barrow in its May 8, 1986, comments on the draft proposed five-year OCS leasing program. The Barrow Deferral would also remove the Chukchi polynya from the sale area which could significantly reduce potential impacts to marine mammals and waterbirds. The Chukchi polynya is an open-water ice lead system

7
STEVE COWPER, GOVERNOR

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Mr. Powers

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that occurs along the eastern shore of the Chukchi Sea. The polynya is formed when prevailing winter and spring easterly winds move the ice pack away from shorefast ice. This tends to maintain an open ice lead system from January onward. The lead system is extremely important to marine mammals and seabirds, particularly bowhead whales and king eiders, as a spring migration corridor. Oil spills in this lead system could severely impact these species. Noise and disturbance caused by industrial activities in this area could also have the potential to disrupt the spring migration of bowhead whales because they would be restricted to the ice lead system.

The state prefers the use of mitigating measures in lieu of deferrals whenever scientific information and technological capabilities enables leasing to proceed in an environmentally sound manner. In the case of the area around Barrow, however, several questions remain which need to be addressed before leasing should occur. The state recommends that leasing be deferred in the vicinity of Barrow for at least another two years in order to: 1) obtain additional information regarding the effects of industry-related noise and disturbance on subsistence whaling activity and marine mammals, including bowhead whales; 2) allow the oil industry to gain additional experience in operating in multi-year ice conditions found in the vicinity of Barrow; and 3) allow time to determine whether appropriate mitigation measures for protecting the wildlife resources in the Chukchi polynya can be developed.

Several studies are currently ongoing which the state would like to review prior to developing a recommendation on the Kaktovik Deferral. A key study entitled "Food Organisms of Bowhead Whales in the Eastern Beaufort Sea" is examining the importance of the eastern Beaufort Sea as feeding grounds for bowhead whales. A similar study entitled "Zooplankton of a Bowhead Whale Feeding Area of the Yukon Coast" is being sponsored by the Canadian Government which will provide information on habitats to the east of Demarcation Point. The DOI is also sponsoring a study entitled "Prediction of Drilling Site-Specific Interaction of Industrial Acoustic Stimuli and Endangered Whales: Beaufort Sea" which will provide additional data on potential disturbance effects to bowhead whales. All of these are two-year studies with the final reports to be available in the Spring of 1987. Shell Western E&P Inc., and Union Oil Co., both monitored their drilling activities this past summer to assess the potential disturbance of drilling and support activities to migrating bowhead whales. Preliminary drafts of these results will also be available by March 1987. These studies should provide important information to assessing the effects of oil and gas exploration, development, and production on bowhead whales. The state anticipates developing a recommendation on the Kaktovik Deferral for the Proposed Notice of Sale after reviewing the aforementioned studies.

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In addition to our specific deferral request, there are a number of areas that are being identified at this time in which both the state and federal government claim ownership. Some of these areas are the subject of litigation. The state is considering the feasibility of an interim agreement with Minerals Management Service (MMS) for oil and gas leasing purposes. If agreement is not reached, the state may request deletion of certain disputed acreage.

Section 810 Evaluation

The DEIS includes a thorough discussion of subsistence uses of fish and wildlife resources by North Slope communities. Like-wise, the Section 810 evaluation of potential impacts on subsistence uses is reasonable and logically consistent. It incorporates many of the recommendations we have made to federal agencies regarding the composition of adequate 810 evaluations, including a community approach, and relatively detailed information on subsistence harvest activities. The 810 evaluation concludes that Sale 97 may result in significant restrictions on subsistence uses of bowhead whales and waterfowl in Barrow, Atkasuk, and Nuiqsut; of bowhead and belukha whales and waterfowl in Kaktovik; and of bowhead and belukha whales, seals, and caribou in Wainwright.

However, the state has two remaining concerns with the Section 810 analysis. First, it does not discuss to what degree the potential "significant subsistence use restrictions" predicted in the section would actually effect the social and economic structure of the affected communities. There currently is no way to determine from the 810 analysis how significant these projected restrictions may be to residents of the North Slope. Some type of quantification and/or assessment would appear to be essential to the development of alternatives on mitigation. Second, it fails to adequately address Section 810(a)(3)(C), which requires that "reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such action." While the evaluation lists some of the types of mitigating measures available, it does not provide any specific plan for assuring that the projected adverse impacts will be minimized.

We believe that Section 810(a)(3)(C) requires a process through which local residents knowledgeable about local subsistence patterns are closely involved in identifying specific problems and working out mitigating solutions. Residents of North Slope villages actively involved in hunting and fishing have the most knowledge of specific local subsistence patterns. Systematically involving them in the mitigation process would help meet the

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requirements of Section 810(a)(3) as well as help ensure the meaningful role for local rural residents envisioned by Congress in the Alaska National Interest Lands Conservation Act (ANILCA) Title VIII.

Proposed Mitigating Measures

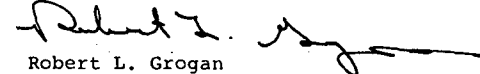
The state supports the adoption of all the proposed stipulations and information to Lessees (ITLs) contained in the DEIS and think they will contribute to the necessary protection for fish and wildlife resources in the proposed sale area. In addition, the state recommends (1) changes to the language of proposed Stipulation 3 regarding protection of biological resources, (2) the adoption of a stipulation regarding testing of oilspill containment equipment, (3) the adoption of Stipulation No. 7 from Sale 87 regarding discharges of produced waters, drilling muds, and cuttings, and (4) modification of ITL No. 2 to ensure lessees take appropriate protective measures in their oilspill contingency plans to protect the biologically sensitive Colville Delta and coastal salt marshes from Kogru Inlet to the west side of Smith Bay. Enclosure 1 contains specific stipulation language recommended for inclusion of mitigating measures for Sale 97.

Environmental Impact Assessment

The state has three major concerns regarding the DEIS analysis of potential environmental impacts, including: (1) DOI's approach to discounting impacts to local populations as well as discounting benefits from various deferral alternatives by evaluating them on a regionwide basis, (2) the failure to include specific discussions or conclusions on the effects of oilspills and noise disturbance on marine mammals and birds in the Chukchi spring lead system, and (3) the DEIS's general discounting of potential oil and gas development impacts to bowhead whales. Each of these concerns are discussed in Enclosure 2.

Please call if you have any questions regarding the state's comments.

Sincerely,


Robert L. Grogan
Director

Enclosures

cc: Commissioner Don Collinsworth, DFG, Juneau
Commissioner Judy Brady, DNR, Juneau
Commissioner Dennis Kelso, DEC, Juneau
Mayor George Ahmaogak, North Slope Borough, Barrow
John Katz, Office of the Governor, Washington, DC
Rod Swope, Office of the Governor, Juneau

ENCLOSURE 1

Recommended Stipulations and Information to Lessee
for the Diapir Field OCS Lease Sale 97

The state supports the proposed mitigating measures contained in the Draft Environmental Impact Statement (DEIS). The following changes or additional measures are also recommended as being necessary to adequately protect the fish and wildlife resources in the Beaufort Sea planning area.

Stipulation 3 - Protection of Biological Resources

The state recommends that the wording of Stipulation 3 be revised as follows:

- a. If the RSFO has reason to believe that biological populations or habitats exist and require protection, the RSFO shall give the lessee notice that the lessor is invoking the provisions of this stipulation and the lessee shall comply with the following requirements. Prior to any drilling activity or the construction or placement of any structure for exploration or well drilling and pipeline and platform placement, hereinafter referred to as "operation," the lessee shall conduct site specific surveys as approved by the RSFO in accordance with prescribed biological survey requirements to determine the existence of any special biological resource including but not limited to:
 - 1. Very unusual, rare or uncommon ecosystems or ecotones; or
 - 2. A species of limited regional distribution that may be adversely affected by any lease operation.

7-4

If the results of such surveys suggest the existence of a special biological resource that may be adversely affected by any lease operation, the lessee shall: (1) relocate the site of such operation so as not to adversely affect the resources identified; (2) modify operations in such a way as not to adversely affect significant biological populations or habitats deserving protection, or (3) establish to the satisfaction of the RSFO, on the basis of the site specific survey, either that such operations will not have a significant adverse effect upon the resource

identified or that a special biological resource does not exist. The RSFO will review all data submitted and determine, in writing, whether a special biological resource exists and whether it may be significantly affected by the lessee's operation. The lessee may take no action until the RSFO has given the lessee written directions on how to proceed.

- b. The lessee agrees that, if any area of biological significance should be discovered during the conduct of any operations on the leased area, the lessee shall immediately report such findings to the RSFO and make every reasonable effort to preserve and protect the biological resources from damage until the RSFO has given the lessee directions with respect to its protection.

The primary advantages from modifying Stipulation 3 would be: (1) it would not be confined to those resources contained in the lease area; (2) the Regional Supervisor of Field Operations (RSFO) would be required to determine, in writing, whether a special biological resource exists and whether it may be significantly affected, versus no requirements for written determinations, and (3) the stipulation would be invoked when resources "require protection," versus when resources "may require additional protection." If adopted, the above language would provide increased protection to the fish and wildlife resources of the proposed sale area.

Stipulation 4 - Seasonal Drilling Restriction for Protection of Bowhead Whales from Potential Effects of Oilspills and Noise

As you are aware, during 1986 the state conducted an extensive review of the seasonal drilling restrictions in the Beaufort Sea. The state's review, based on available information, culminated in a state policy to allow drilling activities from floating platforms to occur during a portion of the bowhead whale migration if an approved research program was conducted. The purpose of the research program was to obtain needed information on the affects of drilling noise and support activities on migrating bowhead whales, and on subsistence whale hunting activity. The state policy allows drilling activities from bottom-founded structures to occur year-round and, depending on the location, lessees may be required to conduct an approved research program.

Although a limited amount of information was acquired from monitoring efforts conducted this summer, we will defer making any recommendations on this stipulation until the results of those studies are available for review.

Recommended Stipulation 6 - Testing of Oilspill Containment Equipment

The state is concerned about industry's capability to cleanup oilspills under conditions characteristic of the Beaufort Sea. The stipulation recommended below is designed to improve a lessee's oilspill response capability by requiring semiannual full-scale drills and frequent inspection of response equipment to assure readiness. Consequently, we recommend that the Testing of Oilspill Containment Equipment Stipulation, as presented below, be included in the Sale 97 Notice of Sale (NOS).

"The lessee shall conduct semiannual full-scale drills at the request of the lessor for platforms and operator-controlled contracted cleanup vessels to test the equipment and the contingency plan. These drills must involve deployment of all primary equipment identified in the oilspill contingency plans as satisfying OCS Order No. 7. At least two of these drills shall include the primary equipment controlled and operated by the appropriate cooperative. These drills will be unannounced and held under realistic environmental conditions in which deployment and operations can be accomplished without endangering safety of personnel. Representatives of the U.S. Coast Guard, Minerals Management Service, and State of Alaska may be present as observers. The lessor's inspectors will frequently inspect oil and gas facilities where oilspill containment and cleanup equipment are maintained in order to assure readiness."

This stipulation would increase the assurance for adequate oilspill response capability currently provided by Alaska OCS Operating Orders Nos. 2 and 7 in five ways. First, this stipulation requires semiannual drills, while Operating Order No. 7 requires annual drills. Secondly, drills under the stipulation are unannounced by the lessor, while Operating Order No. 7 allows drills to be scheduled by the lessee. Third, the stipulation requires at least two drills to involve primary equipment controlled and operated by the cooperative, versus the requirement for only on-site equipment under Operating Order No. 7. Fourth, the stipulation directs that drills be held under realistic environmental conditions without endangering the safety of personnel, where as Operating Order No. 7 states that drills shall be realistic. For example, some drills held for St. George Basin Sale 70 leases, to satisfy Operating Order No. 7, have been conducted in Captains Bay outside of Dutch Harbor. Such conditions do not approximate realistic environmental conditions present in the St. George Basin. Finally, the stipulation requires the lessor to perform frequent inspections of oil and gas facilities where oilspill equipment is maintained. No similar requirement is contained under Operating Order Nos. 2 or 7.

Recommended Stipulation 7 - Discharge of Produced Water, Drilling Muds and Cuttings

The following stipulation was adopted for Lease Sale 87 and is intended to maintain water quality and protect fish and wildlife resources by restricting the discharge of produced water and drilling effluents. Consequently, we support its adoption in Lease Sale 97.

"Discharge of produced water into open or ice-covered marine waters of less than 10 meters in depth is prohibited. Discharges into waters greater than 10 meters in depth are subject to a case-by-case review of the local environmental factors and consistency with the conditions of a development/production phase general National Pollutant Discharge Elimination System (NPDES) permit for the sale area."

7-6

"Discharges of drilling muds and/or cuttings during the exploration and development/production phases are subject to the conditions of NPDES permits issued by the Environmental Protection Agency."

Information to Lessees (ITL)

The state recommends that ITL No. 2 - Information on Areas of Special Biological and Cultural Sensitivity be modified to include two additional areas of special biological sensitivity: the Colville Delta and coastal salt marshes from Kogru Inlet to the west side of Smith Bay. The biological importance of these two areas are briefly described below.

The Colville Delta is the most biologically productive delta on the Alaskan Beaufort Sea coast. More species of fish occur within the Colville River than any other Alaskan North Slope river, and the Colville Delta provides critical spawning and over-wintering habitat for many of the species present. High densities of ducks, geese, and loons nest in the Colville Delta, including the largest population of tundra swans, white-fronted geese, black brant, and yellow-billed loons on the Alaska North Slope. The Colville Delta also provides important staging habitat for a variety of waterfowl and shorebirds. In addition, caribou, polar bears, and spotted seals occur in the Colville Delta at various times of the year.

7-7

The salt-influenced wetlands between Kogru Inlet and the west side of Smith Bay are of crucial importance to waterbird populations using the Teshekpuk Lake area and to migrants traveling through the area. These wetlands, with their

associated bays and lagoons, support large populations of many waterbirds including black brant, Canada geese, ducks, shorebirds, and seabirds during the late summer-early fall period when they are preparing for their southward migration. Habitats such as these are essential to provide necessary forage for building energy reserves for fall migration flights. These salt-influenced wetland habitats are maintained by periodic influx of sea water, primarily during storm tides. Such processes could make these wetlands particularly vulnerable to impacts from oilspill events.

ENCLOSURE 2

Critique of the DEIS Impact Assessment for Sale 97

While the DEIS provides useful information on environmental and social issues associated with leasing in the Beaufort Sea, it is difficult to obtain a clear understanding of the potential impacts from oil and gas development when they are evaluated over an area as large as the Beaufort Sea planning area (21.2 million acres). Evaluating impacts over such a large area tends to discount impacts to local areas or benefits from deferral alternatives, on the basis that the net loss or benefit would be insignificant in terms of the overall action. For example, the DEIS on page IV-E-8 states "Alternative IV, the Barrow Deferral Alternative, would not change the regionwide effects of the proposal on subsistence resources or on subsistence activities. However, the deferral would substantially reduce effects of noise and traffic disturbance on Wainwright's and Barrow's subsistence harvest patterns (emphasis added)." By evaluating impacts on a regionwide basis, the DEIS concluded that the overall subsistence effects would remain moderate with or without adoption of the deferral, irregardless of the identified benefits for Barrow and Wainwright subsistence users. This same general approach of discounting oilspill impacts or potential benefits of deferral alternatives, because they would affect only a very small percentage of the planning area, is taken throughout the DEIS impact analysis.

7-8

Specific to the above example, we also note that the DEIS conclusion that effects would remain moderate appears to be in error. Table III-C-1 identifies that the population of traditional Inupiat Villages in the North Slope Region totals 5,272, and that Barrow and Wainwright together total 3,582 or 68 percent. If the adoption of the Barrow Deferral would substantially reduce the effects on subsistence harvest patterns for 68 percent of the population, it is logical that even the regionwide level of effects should be reduced. The DOI appears to be attempting not to identify any significant benefits from adopting the Barrow Deferral Alternative.

7-9

The state is also concerned that, except for the Worst-Case Scenario Analysis, the DEIS does not contain any specific analysis regarding the effects of oilspills or noise disturbance in the Chukchi polynya. This ice lead system is an important spring migration pathway for bowhead and beluga whales and numerous species of waterbirds, particularly eider ducks. It also acts to concentrate these species both spatially and

7-10

temporally which could significantly increase their vulnerability to oilspill or disturbance impacts. For example, the entire population of bowhead whales pass through this lead system from mid-April to early June, and in some years the majority of the migration may occur within a two week period. It is also believed that the entire eastern Beaufort Sea stock of beluga whales, estimated at 11,500 animals, move through this nearshore lead system in spring. Furthermore, the open lead provides essential early-season resting, staging, and feeding habitat for large numbers of alcids, larids, waterfowl, and loons during late April to late June, and extremely large concentrations may occur when inclement weather forces migrants to "stop-over." Unlike the DEIS, the Barrow Arch Synthesis Report repeatedly acknowledges the importance of the Chukchi polynya as a migration corridor, and the high degree of vulnerability to species using this area from potential oilspill or noise disturbance impacts. A detailed analysis on this issue should be provided in the Final Environmental Impact Statement (FEIS) under the Environmental Consequences Section rather than the Worst-Case Analysis. Additionally, it should address potential impacts that could occur to all species using this lead system.

The FEIS should also include a discussion on the potential impacts from oil tankers utilizing this ice lead system. The assumption that oil produced in the Chukchi Sea would be transported to market by a proposed Chukchi Pipeline and the Trans Alaska Pipeline is flawed. The DEIS states on page II-9 that "to justify a pipeline across the southern part of NPR-A, it is assumed oil is also discovered in the Chukchi Sea Planning Area (proposed OCS Sale 109), in the southern part of NPR-A, or both." Electing not to discuss the potential impacts of tankering oil based on the assumption that additional oil will be discovered to support construction of a pipeline is unjustified.

7-11

The last key issue we wish to discuss includes four general concerns regarding the DEIS impact analysis for bowhead whales. First, we note that the overall marine mammal impact projection for Sale 97 significantly differs from the Sale 87 projections. In Sale 97, overall effects are projected to be minor for both endangered and non-endangered marine mammals, while Sale 87 predicted moderate impacts. Although some additional information on potential effects of noise disturbances to marine mammals was obtained between Sales 87 and 97, we would like to know what information MMS has to justify reducing the overall impact projection, which includes both oilspill and noise disturbance effects.

7-12

Secondly, the DEIS fails to include an updated Biological Opinion on endangered whales for Sale 97. This omission restricts the public's opportunity to review and comment on this important document with regard to Sale 97.

7-13

Third, the DEIS appears to discount the potential impacts of an oilspill to bowhead whales. Even under the Worst-Case Scenario, the DEIS states that "In the unlikely event that all negative effects occurred, a low number of whales (less than 100) might be killed; and the overall effect would be to slow the recovery of the bowhead whale population to a nonendangered status." This conclusion contradicts the National Marine Fisheries Service's Biological Opinion for Sale 87 which concludes that such an event would likely jeopardize the continued existence of the species. The DOI should explain why these two impact predictions differ so markedly.

7-14

Finally, we note that the DEIS contains several speculative conclusions that are not fully supported by available information. For example, page IV-B-49 states that "bowheads possess enzymes capable of metabolizing or detoxifying small quantities of ingested oil (Hansen, 1985)." Although it has been determined that some cetaceans do contain such enzymes, to our knowledge, no research on the presence of these enzymes has been conducted on bowhead whales. Similarly, the following paragraph states that "it is likely that any small quantity of ingested oil would be broken down by digestive process and would not block the intestine (Hansen, 1985)." To our knowledge, no scientific information exists to support this claim and we believe definitive studies should be undertaken by MMS on this topic before drawing such conclusions. In terms of noise disturbance, the DEIS summary statement that bowhead whales "may avoid feeding within several hundred meters of drilling units and production platforms" (page IV-B-54) is an underestimation of the available data. The DEIS even provides a reference (Richardson et al. 1985a) on page IV-B-53 which identifies that bowheads may respond adversely to drillship noise out to two kilometers from the sound source. Caution must be exercised in the DEIS not to misrepresent the available information or to reach unsupported conclusions.

7-15

Response 7-1

This concern is addressed in Section I.B.3.e.

Response 7-2

This concern is addressed in Section I.B.3.e.

Response 7-3

This concern is addressed in Section I.B.3.e.

Response 7-4

The MMS believes that Stipulation No. 3--Protection of Biological Resources--as written provides adequate protection for the biological resources of the planning area.

The stipulations proposed in the FIS generally apply to the OCS and leasehold--the area over which MMS has jurisdiction and enforcement authority. If biological populations or habitats outside of the area of MMS's jurisdiction are identified, they can be noted when exploration and development and production plans are reviewed by Federal and State agencies and the public; and, at that time, measures can be recommended that would help protect the biological resources.

The RSFO is required to provide a written notice to the lessee if biological surveys are to be conducted based on the identification of biological populations or habitats that may require additional protection. This notice would provide the written determination that special biological resources exist.

Applicable laws, regulations, orders, and stipulations provide the legal foundation for the required protection of the biological resources associated with the planning area. The Protection of Biological Resources Stipulation specifies those identified biological resources or habitats that may require more protection than is provided by the existing legal requirements.

Response 7-5

The concerns evident in this proposed stipulation are already addressed by Alaska OCS Region OCS Order No. 7, as interpreted in MMS Alaska OCS Region Planning Guidelines for Approval of Oil Spill Contingency Plans (July 29, 1982)--see Allen et al. (1984), incorporated by reference in Appendix C. These guidelines already require annual plus additional drills--all "under realistic environmental conditions"--if drilling operations continue into new seasonal environmental conditions. The guidelines also require exercises that test the alerting/initial response mechanism and command, control, and communications be held as frequently as necessary to demonstrate effectiveness to the OSC. The guidelines--including drill requirements--were formulated in consultation with the USCG and are considered adequate to maintain response performance by both MMS and USCG.

The OCS Order No. 7 (paragraph 3.1) already requires that spill-response equipment and materials on oil and gas facilities be inspected monthly and maintained in a state of readiness for use.

Note that MMS considers the drills conducted in Captains Bay outside of Dutch Harbor to meet the guideline requirement of "realistic environmental conditions" for southern Bering Sea leases, including Sale 70 leases in the St. George Basin and Sale 83 leases in the Navarin Basin. The term "realistic environmental conditions" is not interpreted by MMS or USCG to mean as severe as the "average" conditions--which could be sufficiently severe to preclude response with mechanical equipment or to at least endanger response personnel and risk damage to response equipment.

Response 7-6

The EIS analysis is required to assume that all existing laws and regulations are followed. The EPA is required to conduct ODCE and NPDES analysis for discharges from exploration, development and production, and construction activities in order for the EPA to ensure that no significant degradation of water quality would occur from such activities. The analysis for the EIS must assume that the EPA meets its legally mandated responsibilities and, therefore, must assume that no significant degradation of the environment would occur. As noted in Appendix L, EPA expects to issue a general permit for exploratory drilling operations for Sale 97 and may elect to issue individual NPDES permits for future development and production operations for Sale 97.

If the Secretary decides to conduct a lease sale, there are several steps remaining in the leasing process that must be taken before the sale can be conducted; these steps are described in paragraphs 11 through 13 of Section I.A. As noted in these paragraphs, the Secretary reaches the final decision regarding the proposed sale after considering other new pertinent information and the recommendations of the Governor of the State of Alaska. Thus, other stipulations, such as the Discharge of Produced Water, Drilling Muds, and Cuttings from the Sale 87 NOS, can be considered in each lease resulting from Sale 97 at this time.

Response 7-7

The concern regarding fishes is addressed in Response 2-15.

The concern regarding waterfowl and shorebirds is addressed in Response 2-3. The Colville River Delta has been added to ITL No. 2. All saltmarsh habitats along the coast of the Sale 97 area have been identified as sensitive habitats in the coastal habitat-vulnerability index used in various oil-spill-contingency plans (Alaska Clean Seas, 1983a, b).

Response 7-8

These concerns are addressed in Response 2-1.

Response 7-9

This concern is addressed in Response 1-4.

It should also be noted that a MODERATE effect is not small--it indicates that the subsistence harvest would be eliminated for up to a year.

Response 7-10

The EIS discusses the effects of oil spills and noise on beluga whales and other marine mammals in the offshore lead system from Cape Lisburne to Point Barrow, which the commenter refers to as the "Chukchi polynya," in Section IV.B.4.a(1)(e); see also Figure IV-14, the Spring-Migration Area. In the discussion of marine and coastal birds, the offshore lead system is referred to as the Seabird-Feeding Area in Figure IV-13. The effects of oil spills on birds in this area are discussed in Section IV.B.3.a(1)(b) and the effects of noise in IV.B.3.a(2).

The effects of oil spills and noise on bowhead whales--as discussed in Section IV.B.5.b--are applicable to all marine areas through which the bowheads migrate, including the spring lead system, regardless of season. In addition, the worst-case analysis discusses the specific case of a large oil spill in the spring lead system. This discussion should address the commenter's concern. The inclusion of this spill scenario in the worst-case analysis does not imply that it could not happen; however, the probability of its occurrence is very low. Due to the severe ice conditions present during the spring whale migration, drillships and non-icebreaking vessels would not normally be expected to be present in or near the spring lead system at this time. Consequently, there should be little if any noise associated with OCS oil and gas exploration or production activities in the spring lead system unless a bottom-founded drilling unit or production platform were located in or near a lead. Section IV.B.5.b has been amended to address this concern.

Response 7-11

An economic assessment is made of the various types and numbers of production and transportation facilities that may be constructed and operated based on the mean-case resource estimates for the proposal and the deferral alternatives. Given that a major oil-transportation infrastructure is in place, it was reasonable to assume that oil would be transported from the offshore-production platforms to TAP via pipelines. Although an estimate is given for the total pipeline length that might be feasible for transport of the oil to TAP, the location of any potential petroleum reservoirs is not known. Therefore, some assumptions, as noted in Section II.A.3, had to be made as to where the Sale 97 production platforms might be located. Because the estimated total pipeline length is not sufficient to connect both platforms to TAP, some additional assumptions had to be made to complete the pipeline connection; Section II.A.3.

The scenarios for the proposal and the alternatives do not include tankering of crude oil and, therefore, the effects of such tankering are not considered in the analysis of the Chukchi Sea portion of Sale 97. However, possible effects that could result from tankering of oil through the planning area are discussed as part of the cumulative case.

Response 7-12

The resource estimate for Sale 87 was substantially higher than the estimate for Sale 97 (almost five times higher). This resulted in an estimate for Sale 87 of about three times more exploration and delineation wells, three times more drilling units, four times more production platforms, five times

more production and service wells, and seven times more oil spills of 1,000 barrels or greater than for Sale 97. The higher level of effect that potentially could result from exploration and development and production activities and oil spills for Sale 87 led to the conclusion of a higher level of effect on marine mammals and bowhead whales.

The difference in the level of estimated effect on nonendangered marine mammals between the Sale 87 FEIS and the Sale 97 FEIS also reflects more recent knowledge acquired from studies concerning noise and disturbance of marine mammals. In the case of nonendangered marine mammals--specifically, ringed seals--the Sale 97 FEIS conclusions of the on-ice experiments regarding seismic disturbance of denning ringed seals indicate that this potential disturbance source has a MINOR or NEGLIGIBLE effect on the distribution and abundance of ringed seals. At the time the Sale 87 FEIS was written, seismic disturbance was thought to have a significant effect on seal distribution.

Response 7-13

Consultation for Sale 97 was initiated by MMS with the NMFS on July 17, 1985. Prior to receiving the biological opinion, we provided NMFS with additional information on several occasions and conducted informal discussions on the progress of the consultation. The MMS received the NMFS biological opinion on endangered whales on May 19, 1987; it is included in Appendix J.

Response 7-14

One possible explanation is that seven times more oil spills were estimated for Sale 87 than for Sale 97. In addition, we are unable to find evidence to indicate a substantial number of bowhead whales would be killed or injured as the result of an oil spill. Any oil spills that might occur would cover a rather small area, and even a large spill of 10,000 barrels under open-water conditions would cover only 1 to 2 square kilometers. Oil is unlikely to adhere to substantial areas of bowhead skin, and experiments with oiling the skin of other cetaceans have resulted in minor and transient effects. Baleen fouling, should it occur, has been shown to be reversible in 24 to 48 hours. Bowheads are unlikely to consume enough contaminated prey items to be harmed. About the only conditions we could foresee as potentially causing serious harm to bowheads from an oil spill are (1) if bowheads were trapped in a small open-water pond or lead into which a large quantity of fresh crude or refined product is spilled such that bowheads are forced to repeatedly surface through oil and inhale petroleum vapors or (2) if bowheads were to aspirate (inhale) regurgitated hydrocarbons of the type found in a fresh spill. We believe the probability of this happening is very low. Appendix C, Section I.D, describes the fate and behavior of spilled oil in a lead or polynya. Spilled oil would be blown to its downwind edge, where it would accumulate in a band. Here, it would be either frozen into the ice or contained behind accumulating brash ice. In any case, it is unlikely that oil would completely cover the surface of the water, except in cracks and very small pools. Also, with the oil situated along the downwind edge of the lead, any toxic vapors would be carried away from the lead by the wind. Volatile compounds are lost from an oil slick within 24 to 48 hours, much of this by evaporation (Jordan and Payne, 1980). Geraci and St. Aubin (1986) predict that at the source of a fresh spill of light crude oil, vapor concentrations of several thousand parts per million could occur (which could be harmful) but should not persist for more than a few hours.

In order for petroleum hydrocarbons to be regurgitated and aspirated, they must first be ingested. This would seem to require that bowheads be feeding in the vicinity of spilled oil and that they ingest oil with prey items or feed on contaminated prey items. This would be unlikely to occur as it appears bowheads feed very little during their northward migration (Frost and Lowry, 1981b), although feeding occurs in some areas during some years (Hazard and Lowry, 1984; George and Tarpley, 1986).

Response 7-15

Geraci and St. Aubin (1986) state that in fish and mammals, ingested hydrocarbons are metabolized by enzyme systems in the liver and are excreted in the urine. These enzymes are ubiquitous in mammals (Gillette, Davis, and Sasame, 1972) and have been demonstrated in other whale and dolphin species (Geraci and St. Aubin, 1982), and it is reasonable to assume that they also exist in bowhead whales (Geraci and St. Aubin, 1986). There is no evidence to indicate that small amounts of ingested oil would block the gastrointestinal tract of bowheads. There is evidence that bowheads would be capable of metabolizing small quantities of ingested oil (Geraci and St. Aubin, 1986). There is no evidence to indicate that whales would knowingly ingest large amounts of oil. Rocks and other indigestible materials found in bowheads' stomachs appear to have had no harmful effect (Lowry and Burns, 1980); clam shells have been found in the lower intestine (Frost and Lowry, 1981b) that cleared the channel; and manatees, which have a considerably smaller pyloric opening (Reynolds, 1980), pass tar balls without any obvious effects (Smithsonian Institute, 1981a,b,c). Testing the hypothesis that bowheads can metabolize and pass crude oil and petroleum products is highly impractical. Consequently, inferences from related species must suffice.

The text in Sections IV.B.5.b and c has been amended to address the concern regarding the effects of noise.

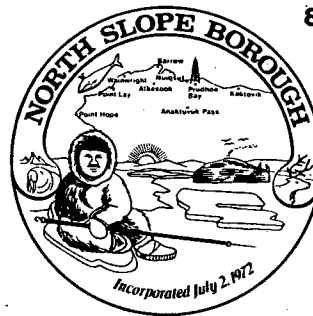
NORTH SLOPE BOROUGH

OFFICE OF THE MAYOR

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George N. Ahmaogak, Sr., Mayor



8

January 12, 1987

Mr. Dick Roberts
Regional Director
Alaska OCS Region
Minerals Management Service
949 East 36th Avenue, Room 110
Anchorage, Alaska 99508-4302

Dear Mr. Roberts:

Please regard this letter as the response of the North Slope Borough to your call for comments regarding the proposed Beaufort Sea Lease Sale 97. As the area-wide local government for the northernmost region in Alaska, bordering the Beaufort and Chukchi Seas, the Borough speaks to those potential impacts of greatest concern to the people of its member villages who rely upon subsistence resources for their sustenance.

The Borough would support the proposed Beaufort Sea Lease Sale Number 97, upon the following conditions:

1. That the 201 blocks described in the draft environmental impact statement (DEIS) as Alternative IV, Barrow Deferral, be deleted from the sale and deferred for at least five years;
2. That the 161 blocks as described in DEIS Alternative V, Kaktovik Deferral, be deleted from the sale and deferred until currently ongoing research is concluded and that area is found not to be a critical feeding habitat for the bowhead whale;
3. That stipulation #4, seasonal drilling restriction for protection of bowhead whales from potential effects of oil spills, as set forth in the DEIS on page II-16, be incorporated into each lease; and
4. That a further stipulation be included in each lease which restricts any drilling to above threshold depth prior to the commencement of bowhead whale migration.

5. The North Slope Borough has no objection to exploration in the Chukchi Sea lease area. However, the Borough recommends that studies be made in this area to adequately describe the life forms present and their interrelationships. The Borough is concerned that this area lacks a data base which is needed to make reasoned decisions, in particular with regards to the subsistence resources and their habitat. The Borough also realizes that the main pack ice movements within the proposed lease area will pose new problems for industrial exploration and development. Therefore, it is recommended that studies of sea ice dynamics be conducted prior to any activity taking place.

The NSB joins the Alaska Eskimo Whaling Commission in its support of deferral of both the Barrow area (Alternative IV) and the Kaktovik area (Alternative V) from Lease Sale Number 97.

IN SUPPORT OF THE BARROW DEFERRAL ALTERNATIVE (IV)

The Barrow Deferral is particularly important because of the ice dynamics of the Pt. Barrow area, the many animal species that live in and migrate through the zone, and the people that use these animals. During the winter and spring the pack ice and shear zone are closer to land in the Barrow Deferral area than at any other place along the Beaufort Sea coast. The shear zone is the dynamic area between the pack ice and the landfast ice. The pack ice is moved by winds and water currents creating leads of open water within the shear zone. When the pack ice is pushed close to the landfast ice there is a limited amount of open water in which marine mammals using this area may surface. An oil spill or oil which has been trapped in the ice and released by melting could cover all open water in the area. Industrial activity in the area could displace animals and affect the subsistence hunt.

Bowhead and beluga whales are particularly susceptible to industrial activity in the Barrow area because they must migrate through the area. Oil covering the open water could block the migration route or force whales into contact with oil. The presence of spilled oil presents a clear danger especially regarding ingestion and contact with the eroded areas of skin of the bowhead whale (Albert, 1981). Oil may adhere to rough skin or tactile hairs (Haldiman et al., 1981), and it reduces the filtering efficiency of bowhead whale baleen (Braithwaite et al., 1983). It is stated on page IV-B-49 that whales trapped in an oil covered lead from which they could not escape could die or suffer pulmonary distress as a result of breathing petroleum vapor. This is possible in the Barrow area. Bowheads have been observed in the Barrow area continually returning to the same polynya presumably because there was no more open water where they could surface (Carroll and Smithhisler, 1980). The actual inhalation of oil is also possible. Very close range observations (within 5 meters) have been made of bowhead whales and it was seen that water pooled in the closed external nares when the whales surfaced (Carroll and George, 1985). Oil on the surface of the water would probably also collect in the external nares and adhere to the folds of skin and tactile hairs surrounding the blowhole. The skin around the blowhole is often quite abraded from rubbing on ice and would provide another surface to which oil could adhere. There could be some oil remaining after the exhalation so the powerful inhalation, pulling air past these hairs and skin, could pull oil into the respiratory tract.

Bowhead whales have behavioral traits that increase their likelihood of contacting oil spills. It is stated on page IV-B-49 that only a small fraction of the bowhead population would likely occupy an affected lead at any given time. In fact much of the population could occupy a section of the lead anytime from April to June. Bowheads can be seen migrating past Pt. Barrow from early April through June, but often they pass in pulses where a large percentage of the whales pass during a short time period. For instance, in 1985, 43% of the whales counted were seen during 3% of the watch season (George et al., 1987). These pulses generally occur during late April and early May. There are exceptions as in 1980 when no whales were seen until 21 May and 70% of the population passed from 24 through 27 May (Krogman et al., 1982). Cows with calves also often pass during a relatively short time. For example, 38 of 59 calves counted in 1986 were seen from 21 May through 30 May (George et al., 1987). Therefore, an accident at the wrong time could have a profound effect on the population.

One of the reasons given for the Barrow Deferral on page II-26 of the DEIS is that during the fall bowheads feed in the area east of Pt. Barrow. The Pt. Barrow area, not just the area east of Pt. Barrow, is periodically an important feeding area. Ljungblad et al. (1985) reported that the largest aggregations of feeding bowhead whales observed during their 1984 fall surveys along the Alaskan and Canadian Beaufort Sea coast were near Pt. Barrow. Forty five to seventy feeding whales were seen on 3 separate days over a 6 day period (22 Sept. - 28 Sept.).

Feeding occurs in the Pt. Barrow area during the spring as well as the fall. Each of the 3 whales harvested near the village of Barrow during the spring of 1985 had over 5 liters of recently eaten food in its stomach and one had 16-24 liters. The food consisted mostly of calanoid copepods and euphausiids (Carroll and George, 1985).

Intensive feeding behavior was observed 11.2 km southwest of Pt. Barrow by North Slope Borough Whale Census observers from 25 May to 6 June 1985. At least 60 bowheads were seen feeding during a period of 12 days. There were often up to 12 whales feeding at a time. Individual bowhead whales were seen in the area for up to 15 hours (Carroll and George, 1985).

Feeding was spread over a considerable time and distance. Stomach contents were collected from a whale on 9 May and feeding behavior was observed on 6 June. Therefore feeding activity occurred for over three weeks (Carroll and George, 1985). Bowhead whales which were harvested were presumably feeding south of the village of Barrow. Bowhead whales were observed defecating and other bowheads were seen with sediments streaming from their mouths north of Pt. Barrow*. These are apparently results of feeding (Wursig et al., 1985). Therefore, feeding activity occurred in an area at least 20 kilometers in length.

*Nerini, M.K., National Marine Mammal Lab, 7600 Sand Point Way Bldg. 32, Seattle WA 98115, Personal Communication.

During the spring of 1986 bowhead whales were again seen feeding in the Barrow area. On both 5 and 6 June at least 9 whales were seen feeding from 29 km south-west of Barrow to north of Pt. Barrow and one whale was seen defecating in the area. Of the 7 whales harvested in Barrow, 4 had food in their stomachs and one contained approximately 60 liters of zooplankton (George et al., 1987). The Barrow Deferral area is obviously a feeding area during spring and fall.

Polar bears could be affected by industrial activity on the ice. Exploration on the Beaufort Sea could have a major impact on female polar bears with cubs. According to information gathered from radio-collared bears, 87% of female polar bears den on sea ice. Disturbances could cause females to abandon dens and endanger cubs who are too young to survive outside the den.*

An oil spill can be hazardous to polar bears if the fur is fouled or if oil is ingested. As stated on page IV-B-35 polar bears are not likely to avoid oil spills. In fact, they are very curious and may approach them intentionally. Oil readily clings to polar bear fur and reduces the ability to thermoregulate. The heat conductivity across the skin is greatly increased and metabolism is increased to compensate (Hurst et al., 1982; Oritsland et al., 1981). This can lead to hypothermia and possibly death.

Ingestion of oil could occur if a polar bear came into contact with oil and subsequently groomed itself by licking its fur or ate food contaminated with oil. Ingested oil severely affects the blood and renal functions of polar bears and has led to the death of 2 captive polar bears. The bears had groomed their fur after contacting oil (Oritsland et al., 1981; Englehardt, 1981). Thus oil exploration could be damaging to local populations of polar bears.

Ringed seals are particularly vulnerable to oil in ice because of their behavior. They scratch breathing holes and entrances to subnivean birth lairs in the ice. Both the breathing holes and the access holes to birth lairs would tend to concentrate oil. Fouling of the fur and inhaling fumes could result. Oil decreases the insulative value of the fur. Pups are particularly affected because they have little or no blubber for insulation (National Research Council, 1985).

Seals are commonly hunted in the Barrow Deferral area and an oil spill in the area could seriously affect subsistence hunting opportunities.

*Amstrup, S., U.S. Fish and Wildlife Service, 1011 East Tudor Road, Anchorage, AK 99503, Personal Communication.

IN SUPPORT OF THE KAKTOVIK DEFERRAL ALTERNATIVE (V)

The Borough is convinced that a major feeding area of the bowhead whale is within the Kaktovik Deferral area. Oil spills and/or acoustic disturbances from oil and gas exploration and development are likely to endanger the whales, reduce the availability of the feeding area to them, or both.

Leasing in the Kaktovik Deferral area should be deferred until there is convincing evidence that this area is NOT an essential feeding habitat for bowhead whales. The present study funded by Minerals Management Service is expected to provide data useful in determining the value of this area to feeding whales. However, simply conducting such a study does not infer that enough data will be collected. If there is not enough information to make a reasonable judgement about the Kaktovik Deferral area, then both research and deferral must continue.

The Kaktovik Deferral Area is an area used by the bowhead whales during their annual fall migration. The Inupiat subsistence whalers have long known these waters to be a feeding area for bowhead whales. For this reason it is felt that more intense studies are required to properly define the nutritional importance of the area to bowhead whales. We strongly feel that there should be additional studies regarding industrial noise impacts to feeding and/or migrating bowhead whales. Thus, the Borough recommends that the Kaktovik area be deferred to allow for the completion of studies which will develop an adequate data base.

ADDITIONAL COMMENTS:

1. Speculation

The sale 97 DEIS contains a great many speculative statements. We are concerned that many of these statements are not based on hard or conclusive evidence. Following are three examples:

a. Habituation of bowhead whales to exploration-related and development-related acoustic disturbances is mentioned on pages IV-B-53 (paragraph 2) and IV-B-56 (paragraph 2). The DEIS states that "...habituation to distant geophysical seismic activities could occur (and is likely to already have occurred)..." There is no conclusive evidence for this statement, only previous speculation.

b. The DEIS predicts minimal effects on bowhead whale behavior from undersea pipeline installation (page IV-B-50, paragraph 3), vessel activity (page IV-B-52, paragraph 2), and seismic noise (page IV-B-53, paragraph 2). These statements are also highly speculative.

There have been a number of studies of industrial acoustic effects on bowhead whales. Such studies have gathered useful information and should be continued. Recording the behavior of bowhead whales at various

distances before, during and after specific industrial underwater sounds provides valuable data. However, these data are not sufficient for reliably predicting the effects of industrial undersea noise on bowhead whale migration, feeding behavior or mating behavior.

c. The DEIS states on page IV-B-50 that, after a spill, oil-contaminated prey would probably comprise only a small fraction of bowhead whale food intake. There is no sound basis for this comment. Depending on the location and size of the spill, contaminated prey may comprise a large fraction of food consumed by the whales.

The feeding behavior and feeding locations of bowhead whales are poorly understood. Therefore, it is unfair to the DEIS reader to give the impression that reliable predictions about prey consumption can be made.

There are two conclusions to be drawn from these examples. First, the Barrow and Kaktovik Deferral areas should be deleted from Lease Sale 97 because there is not yet enough information to determine the effects of oil spills and industrial noise on bowhead whales. Second, the final DEIS must show clearly which statements are based on hard evidence and which statements are speculative. Far-reaching decisions will be made on the basis of the final Sale 97 EIS. The readers who will make these decisions must be presented with accurate and unbiased information.

2. Underestimation of Effects of Oil and Gas Exploration

A second major failing of the DEIS is that the potential effects of oil and gas exploration and development are generally underestimated. Following are a number of specific examples of such underestimation:

a. The potential effects on the BOULDER PATCH community are rated as MODERATE (page IV-B-12, paragraph 3 and page IV-B-13, paragraph 2). The DEIS states, on page III-14, paragraph 2, that the Boulder Patch contains the largest kelp community described to date. Thus, one concludes that the Boulder patch kelp community may contain most of the regional kelp population. The potential oil impact to such a community could be MAJOR. If an oil spill reached the Boulder Patch area, "abundance and/or distribution of the regional population could decline beyond which recruitment could not return to former population levels within several generations". According to Table S-2, this is the definition of a MAJOR effect.

b. The DEIS predicts the effects of oil on anadromous fish in the Beaufort Sea to be MINOR or possibly MODERATE (page IV-B-17, paragraph 1). Regional arctic char populations overwinter and spawn in specific coastal rivers. If an oil spill occurred during the peak exit from the river or return to the river, the numbers of all age classes could be drastically reduced. Recovery would take a number of generations. According to Table S-2, this effect would be MAJOR.

c. On page IV-B-54, paragraph 3 ("(a) Summary"), the DEIS states that, as a result of an oil spill, a few bowhead whales may be affected and the effect would be MINOR. This paragraph represents one of the worst underestimates in the entire document. If oil entered the lead during the spring whale migration, many if not all of the migrating whales could be affected. The population could decline in abundance due to loss of calves, death of sexually mature adults, abortion by pregnant cows or reduced reproductive capability of sexually mature whales. Recovery could take many generations. Such an effect is MAJOR.

d. The cumulative effects of oil development on bowhead whales could hardly be less than the effects of development on bowhead whales in the Sale 97 area alone. Therefore, the potential cumulative effects of oil development on bowhead whales are MAJOR not MODERATE (page IV-B-56, paragraph 3).

e. Based on the preceding paragraphs (c and d), the Worst Case Analysis for bowhead whales (pages IV-I-1 through IV-I-3) is greatly underestimated. There is no mention in the analysis that some or all of the calves in the whale population could be affected or lost. There is no discussion of potential decline in population reproduction after contact with an oil spill. The Worst Case Analysis should be rewritten to be more realistic. The expected effects should be MAJOR, not MODERATE.

f. The DEIS states (page IV-B-90, paragraph 1) that the "... effects to the harvest of bowheads due to oil spills may be MODERATE ...". In the case of an oil spill in the spring lead system, bowhead whales would be contaminated with oil. The subsistence hunt could be greatly reduced or eliminated for one or more seasons because of dangers to humans if they consumed contaminated whales. A greater impact to the subsistence hunt could come from the International Whaling Commission (IWC), which sets the subsistence harvest limits. If there were an oil spill during the spring whale migration, the IWC could ban the subsistence hunt until the effects of the spill on the whale population were assessed and the population had recovered. Such an assessment and population recovery may well take years. The subsistence harvest could be banned for years, a MAJOR effect on the subsistence hunt according to the definitions in Table S-2.

g. The potential effects on beluga whales are predicted to be MINOR (page IV-B-44, paragraph 4). An oil spill in the spring lead system could, however, have nearly the same effect on the beluga whale population as on the bowhead whale population.

The potential negative impacts discussed in examples a through g above are a basis for deferring the Barrow and Kaktovik Deferral areas: the potential harmful biological and cultural effects of oil exploration and development in the Barrow and Kaktovik Deferral areas are so great that leasing in these areas must be deferred.

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An example of more realistically predicting potential biological impacts of oil and gas exploration and development is the Draft Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment (November 1986) by the U.S. Fish and Wildlife Service. The USFWS document is also more realistic about decreases in potential impacts with alternative proposals.

3. Unrealistic Comparison of Effects Between the Proposal and Alternatives

We are greatly concerned that, in Table S-1, there are very few predicted decreases in negative impacts from Alternative I (the proposal) to any of the three deferral alternatives. Of 54 possible changes in effects on plants, animals and subsistence (Resource Categories 1 - 6 and 9), predicted declines in effect from proposal to an alternative occurred in only (1) pinnipeds, polar bears, beluga whales in Alternative VI and (2) gray whales in Alternative IV.

8-22

We feel that, in reality, the deferrals would provide many more decreases in effect. Therefore, comparisons of potential effects between the proposal and alternatives should be corrected in the final EIS.

4. Poor Understanding and Appreciation of Subsistence

The DEIS demonstrates a gross lack of understanding and appreciation of subsistence hunting and fishing. The treatment of potential dangers to bowhead whales and to the bowhead whale subsistence harvest are prime examples.

8-23

Another example is seen on page IV-B-91, paragraph 4 (labelled " (c) Effects on Fish Harvests") in the first sentence: "While fish do not serve as Inupiat cultural symbols as do bowhead whales and caribou, their reliability and year-round availability make them a very important subsistence staple." Statements such as the phrases about fish not being cultural symbols are UNNECESSARY and may be offensive to noncoastal Inupiat. Many noncoastal Inupiat people are not associated with the bowhead whale hunt, and fishing is a primary subsistence activity for them. The statement about year-round availability is misleading. Fish availability is relatively low from about February through breakup because the ice is too thick for under-ice netting.

8-24

5. Inconsistent Statements

There is inconsistency in the DEIS discussions of oil and gas exploration and development effects passing from lower to higher trophic levels. On the first page of Table II-C-1, the DEIS states that no effects on lower trophic organisms are expected to be passed on to higher trophic levels. The inconsistency appears on page IV-B-18, paragraph 2: "Fish populations may be affected indirectly, through effects on food sources..."

8-25

6. Additional Comments Regarding Fish and their Subsistence Use

The list of "important fishes based on numerical abundance or human use" (page III-19, 2nd to last sentence) has an important omission--broad whitefish. Regarding Barrow, Atkasuk and Nuiqsut, arctic cisco and broad whitefish are the

8-26

preferred species (George and Nageak, 1986). It was estimated that in 1985 20,000 lbs of broad whitefish, 28,000 lbs. of arctic cisco and over 300 arctic char were harvested by Nuiqsut residents (Moulton et al., 1986). This exceeded the reported commercial catch in the Colville for that year (Moulton et al., 1986). Few arctic cisco are captured in the Admiralty Bay drainages, however broad whitefish, humpback whitefish, least cisco and burbot comprise the bulk of the catch (J.C. George, Department of Wildlife Management, North Slope Borough, Barrow, AK., unpublished field notes). An estimated 2,000-4,000 arctic char were taken at Kaktovik in 1985 (Envirosphere Co., 1985).

The DEIS states (page III-20, second para., sentence 6) that arctic cisco recruit to the Colville river "every three to four years". There are not sufficient data on recruitment of arctic cisco to suggest this; furthermore both 1985 and 1986 were large recruitment years for arctic cisco into the Colville and mid-Beaufort (Envirosphere Co., 1985 and 1986). From the second part of the sentence that reads "juvenile fish may use Alaskan rivers...as overwintering habitat", delete the word "may" as anadromous fish have been documented to use the deltas for overwintering (Adams, 1986; Moulton et al., 1986).

8-27

The DEIS statement (page III-22, sixth para, last sentence) that little is known about the Nuiqsut fishery is incorrect. There are several reports which give detailed harvest data, locations and estimates (George and Nageak, 1986; George and Kovalsky; 1986; Moulton et al., 1986). In 1985 the Nuiqsut catch exceeded the commercial catch.

8-28

The prediction of NEGLIGIBLE effects on subsistence (page IV-B-92) could be MAJOR if an oil spill were to enter the Colville River delta. This is because fishing, particularly in the delta, is the principle subsistence activity in Nuiqsut.

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Nuiqsut has the largest documented subsistence fishery on the U.S. Beaufort Sea coast and this should be mentioned in the summary of subsistence effects (page IV-B-94) (Moulton et al., 1986).

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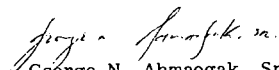
SALE 97 BIOLOGICAL OPINION

Finally, the Borough objects to the absence from the DEIS of a draft biological opinion as to the potential effects of Sale 97 OCS oil and gas leasing and exploration activities on endangered whales. Such a draft biological opinion should have been prepared pursuant to Section 7 of the Endangered Species Act. Appendix J of the DEIS included a copy of an opinion issued by the National Marine Fisheries Service in relation to Lease Sale 37 on December 19, 1983. This was not really sufficient to afford the public a meaningful opportunity to comment. Moreover, the omission may have constituted a violation of Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA) as it denies the public an opportunity for a comment and hearing process-with the benefit of the findings required by ANILCA Section 810(a). See 16 USC 312 (a) and (b).

8-31

Thank you for your time and consideration upon receiving these comments.

Sincerely,


George N. Ahmaogak, Sr.
Mayor

cc: Edward Itta, Director, Planning Dept.
Harold Curran, NSB Dept. of Law
Warren Matumeak, Land Management Administrator
Ben Nageak, Director, Dept. of Wildlife Management
Arnold Brower, Jr., Chairman, Alaska Eskimo Whaling Commission
Ron Nalikak, Alaska Eskimo Whaling Commission
Nate Olemaun, Mayor, Barrow
Loren Ahlers, Mayor, Kaktovik
Maggie Kovalsky, Mayor, Nuiqsut
Jacob Kagak, Mayor, Wainwright

References:

- Adams, B. Part V. Draft Endicott Environmental Monitoring Studies 1985. Overwintering Study. Envirosphere Co. Bellevue, Washington.
- Albert, T., 1981. Some thoughts regarding the possible effects of oil contamination on bowhead whales, *Balaena mysticetus*. In: Tissue Structural Studies and Other Investigations on the Biology of Endangered Whales in the Beaufort Sea., T.F. Albert (ed), pp. 945-953. Report to the Bureau of Land Management from the Department of Veterinary Science, University of Maryland, College Park, MD, 20742. 953 pp.
- Braithwaite, L.F., Aley, M.G., and Slater, D.L. 1983. The Effects of Oil on the Feeding Mechanism of the Bowhead Whale. Prepared for USDOI, MMS, Provo, UT, Brigham Young University.
- Carroll, G.M. and George, J.C. 1985. Feeding activities of the bowhead whale (*Balaena mysticetus*) during spring migration near Pt. Barrow, Alaska. Paper presented at from 6th Bien. Conf. Biol. Mar. Mamm., Vancouver, B.C. November 1985. Available from Dept. Wildlife Mgt., North Slope Borough, Barrow, AK 99723.
- Carroll G.M. and Smithhisler J. 1980. Observation of bowhead whales during spring migration. Mar. Fish. Rev. 42 (9-10): 80-85.
- Engelhardt, F.R. 1981. Oil pollution in polar bears: exposure and clinical effects, pp. 139-179. In: Proceedings, Fourth Arctic Marine Oil Spill. Program Technical Seminar. Edmonton, Alberta.
- Envirosphere Co. 1985. Draft Endicott Environmental Monitoring Program (1985). Prepared for the Department of the Army, U.S. Army COE, Alaska District, Anchorage, AK. and Standard Alaska Production Co. 900 East Benson, Anchorage, Alaska.
- Envirosphere Co. 1986. Monthly Technical Reports for 1986 Field Season. Prepared for the Department of the Army, U.S. Army COE, Alaska District, Anchorage, AK. and Standard Alaska Production Co. 900 East Benson, Anchorage, Alaska.
- George, C.G., Carroll, G.C., Tarpley, R.J., Albert, T.F., and Yackley, R.L. 1987. Report of field activities pertaining to the spring 1986 census of bowhead whales, *Balaena mysticetus*, off Pt. Barrow, Alaska with observations on the subsistence hunt. Intl. Whal. Comm. In Press.
- George, J.C. and Kovalsky, R. 1986. Observations on the Kupigruak Channel (Colville River) Subsistence Fishery-October 1985. Report by the North Slope Borough, Box 69, Barrow, Alaska. 99723
- George, J.C. and Nageak, B.P. 1986. Observations on the Colville River Subsistence Fishery at Nuiqsut, Alaska-for the period 4 July- 1 November 1984. Report by the North Slope Borough, Box 69, Barrow, Alaska. 99723

Haldiman, J.T., Abdelbaki, Y.Z. Al-Bagdadi, F.K., Duffield, D.W., Henk, W.G. and Henry, R.W. 1981. Determination of the gross and microscopic structure of the lung, kidney, brain and skin of the bowhead whale, Balaena mysticetus. In: Tissue Structural Studies and Other Investigations on the Biology of Endangered Whales in the Beaufort Sea, T.F. Albert, (ed) pp. 305-662. Prepared to the USDO, BLM, Alaska OCS Office from the Department of Veterinary Science, University of Maryland, College Park, MD 20742 953 pp.

Hurst, R.J., Oritsland, N.A., and Watts, P.D. 1982. Metabolic and temperature responses of polar bears to crude oil, pp. 263-280. In: P.J. Rand (ed.) Land and Water Issues in Resource Development. Ann Arbor Science Publishers, Ann Arbor, Mich.

Krogman, B.D., Sonntag, R., Rugh, D., Zeh, J., and Grotefendt R. 1982. Ice based census results from 1979-81 on the western arctic stock of the bowhead whale. Int. Whal. Comm. SC/34/PS 6, 42 pp.

Ljungblad, D.K., Moore, S.E., Clarke, J.T., Van Schoik, D.R., and Bennet, J.C. 1985. Aerial Surveys of Endangered Whales in the Northern Bering, Eastern Chukchi, and Alaska Beaufort Seas, 1984: With a Six Year review, 1978-1984. Technical report 1046. Prepared for USDO, MMS., Naval Ocean Systems Center, San Diego, CA.

Moulton, L., Field, J., Brotherton, S. 1986. Assessment of the Colville river fishery in 1985. Entrix Inc. 4794 Business Park Blvd. Suite #6. Anchorage, AK. 99503.

National Research Council. 1985. Oil In The Sea, Inputs, Fates, and Effects. Washington D.C. National Academy Press. 601 pp.

Oritsland, N.S., Engelhardt, F.R., Juck, F.A., Hurst, R., and Watts, P.O. 1981. Effect Of Crude Oil On Polar Bears. Department of Indian Affairs and Northern Development Canada Publication QS-8283-020-EE-AI. Canada Catalog No. R71-19/24-1981E. 268 pp.

Wursig, B., Dorsey, E.M., Richardson, W.J., Clark, C.W., and Payne, R. 1985. Normal Behavior of Bowheads, 1980-84. p. 13-88 IN: W.J. Richardson (ed.), Behavior, Disturbance Responses, and Distribution of Bowhead Whales Balaena mysticetus in the Eastern Beaufort Sea, 1980-84. Unpubl. Rep. from LGL Ecol. Res. Assoc., Inc., Bryan, TX, for MMS, Reston VA. 306 pp.

Response 8-1

Your concern regarding oil covering an open-water lead is addressed in Response 7-14. Regarding the potential for inhalation of oil that may collect around the blowhole, the typical breathing cycle of cetaceans includes an explosive exhalation followed by an immediate inspiration and abrupt closure of the muscular plug. This mechanism has evolved to prevent inhalation of water and would be as discriminatory of oil (Geraci and St. Aubin, 1980). Gray whales migrate semiannually through an area of natural oil seeps off the California coast, and some animals actually swim through surface oil slicks (Geraci and St. Aubin, 1982). Yet, to our knowledge, there have been no documented cases of gray whales being observed with oil adhering to their bodies or suffering respiratory complications as a result of inspired oil. Likewise, Goodale et al. (1979) observed humpback and fin whales surfacing and feeding in surface slicks of oil spilled from the Regal Sword, yet reported no apparent ill affects from such behavior. Consequently, it would seem most likely that any oil near the blowhole that is not washed away by the explosive exhalation would adhere too tightly to be drawn into the lungs during inspiration.

Response 8-2

The situation discussed in Section IV.B.5.b(1) to which you refer was intended to discuss the specific case of bowheads returning to the same polynya because there was no more open water for them to surface in (such as you referred to Carroll and Smithhisler [1980]). In such a situation, if the polynya were small and oil covered the entire surface, it is possible that the whales trapped there could be seriously harmed by the inhalation of hydrocarbon vapors. However, in such a situation, there would likely be only a small percentage of the whale population present. Vapor concentrations capable of harming whales would generally be expected to dissipate within several hours after the termination of a spill (Geraci and St. Aubin, 1982). While the presence of an oil spill in a larger, more open lead might have the potential to contact more whales because more whales would probably be using this type of lead, the consequences would probably be less serious--the oil would tend to accumulate along the downwind edge of the lead, where it would either be frozen into the ice or contained behind accumulating brash ice. This would leave most of the lead's surface free from oil, and whales contacting oil would probably do so only briefly as they moved through the area.

Response 8-3

The text in Section II.B.2.c has been clarified.

Response 8-4

Oil exploration in the Beaufort Sea would have a MINOR effect on polar bears because most female bears in Alaska den on the sea ice. Polar bear dens are not concentrated on the sea ice but are widely dispersed over a very large area from west of Point Barrow to the Canadian border, and the number of polar bear dens exposed to exploration platforms and other facilities and activities would be few. Thus, the number of females and cubs that could be disturbed and displaced from the dens would be few and would represent a MINOR effect on the population.

Response 8-5

The considerations stated have been addressed in the assessment of potential effects to polar bears in Section IV.B.4.a(1)(b).

Response 8-6

The considerations stated have been addressed in the assessment of potential effects to ringed seals in Sections IV.B.4.a(1)(b), (1)(e), and (6).

Response 8-7

The MMS expects to receive in the next few months final reports on bowhead feeding in the Kaktovik area and potential effects of noise on bowhead whales associated with specific drilling operations in the U.S. Beaufort Sea. This information should supplement the existing database and provide additional information to assist the Secretary in determining whether or not the Kaktovik area should be deferred from leasing.

This concern also is addressed in Response 5-35.

Response 8-8

This concern is addressed in Response 21-24.

Response 8-9

The MMS does not believe that these predictions are highly speculative but rather that they are the most likely case based upon our information to date about bowhead behavior in the presence of industrial noise sources.

Response 8-10

The MMS studies efforts will continue to attempt to better determine the effects of industrial noise on bowhead whales. If you have a particular suggestion for a possible study, please submit it to the Alaska OCS Region office.

Response 8-11

Richardson et al. (1983) state that most cetaceans feed on pelagic fish or zooplankton, which--with the possible exception of very local areas--are generally considered to be largely unaffected by oil spills. Thus, the indirect effects of an oil spill on cetaceans via a reduction of a local food supply or bioaccumulation of petroleum hydrocarbons are unlikely to be a severe problem for most cetacean species. Additionally, because planktonic organisms lose their burdens of ingested oil within a few days, without retaining any residual fractions (Neff et al., 1972), the potential effect on bowheads would decrease rapidly after a spill event.

Response 8-12

Much has been learned about bowhead feeding behavior, feeding areas, and food resources through studies funded by the MMS, NMFS, the State of Alaska, the

Canadian Government, and the NSB. While much is yet to be learned, MMS believes that the past 8 years of aerial surveys of the Alaskan Beaufort Sea have provided us with information that is sufficient to identify the primary bowhead whale-feeding locations within the sale area and to allow a reasoned choice among the leasing options.

Response 8-13

The Secretary of the Interior has the option of deferring any or all of the deferral areas analyzed in the FEIS or areas proposed after consultation with the Governor of Alaska, pursuant to Section 19 of the OCSLA, as amended, from the Sale 97 proposed area.

Response 8-14

This concern is addressed in Response 21-23.

Response 8-15

More-severe potential effects on the Boulder Patch community are likely to come from construction activities and drilling discharges than from oil spills, for reasons cited in the analysis. Long-term deposition or erosion from nearby activities could cause a long-term effect to the Boulder Patch community, so the potential level of these effects has been increased from MODERATE to MAJOR.

Response 8-16

The analysis in Section IV.B.2 has been expanded to address this issue. It was concluded that although an oil spill contacting a delta region or near-shore area when char were aggregated could greatly effect those individuals, a population, although potentially significantly reduced, is not likely to be decimated (for reasons given in the analysis), and a local population should be able to rebound.

Response 8-17

This concern is addressed in Responses 7-14 and 8-2.

Response 8-18

The MMS believes the effects of oil development on bowhead whales would be MINOR as discussed in Section IV.B.5.b and in Responses 7-14 and 8-2. Consequently, cumulative effects on bowhead whales would be MODERATE.

Response 8-19

The worst-case analysis discusses the potential for loss of calves and a reduced reproduction rate in Section IV-1. The MMS believes that a MODERATE effects level represents a realistic worst case.

Response 8-20

The text has been amended to address this concern; see Section IV.B.9.b(1).

Response 8-21

Potential effects of an oil spill in the spring lead system on beluga whales could be different from such effects on bowhead whales--an oil spill is less likely to adhere to the smooth skin of beluga whales than the rougher skin of bowhead whales. Neither are beluga whales plankton feeders, nor do they have baleen plates; thus, oil is less likely to be ingested. Additionally, because the beluga whale population is greater than the bowhead population, the possible loss of some individual whales to the beluga population is not as likely to be as significant as it is to the bowhead population.

Response 8-22

This concern is addressed in Response 2-1.

Response 8-23

MMS recognizes the importance of subsistence hunting and fishing and classifies these activities as major scoping issues--Table I-D-1. Furthermore, MMS has analyzed potential measures to help eliminate or reduce the threat that oil exploitation poses to the subsistence resources. These measures include: (1) the Barrow and Kaktovik Deferral Areas; (2) the Orientation Program (No. 2), Protection of Biological Resources (No. 3), and Seasonal Drilling Restriction (No. 4) stipulations; and (3) Bird and Marine Mammal Protection (No. 1), Areas of Special Biological and Cultural Sensitivity (No. 2), and Subsistence Whaling and Other Subsistence Activities (No. 5) ITL's; Section II.B.1. Subsistence activities are adequately described in Section III.C.3 and are analyzed with regard as to how they might be affected by the proposed action in Section IV.B.9.

In addition, Section IV.B has been revised to address specific comments regarding subsistence that were received during review of the Sale 97 DEIS.

Response 8-24

Section IV.B.9.b(3) has been amended to address this concern.

Response 8-25

Section IV.B.2.a(1)(c) has been clarified to address this concern.

Response 8-26

The statement in question was drawn (and referenced) from Craig (1984a). It is important to note that this was a combined statement based on sheer numerical abundance or use by humans. The text in Section III.B.2 has been amended, however, to also stress the importance of broad whitefish.

Response 8-27

The text in Section III.B.2 has been amended to address these concerns by including information that has become available since publication of the DEIS.

Response 8-28

The text in Sections III.B.2 and .3 has been amended to reflect new information received since the DEIS was published.

Response 8-29

The effects of an oil spill in the Colville River Delta on Nuiqsut's subsistence harvest could be greater than NEGLIGIBLE. However, for Sale 97, there is a less than 2-percent chance of an oil spill of 1,000 barrels or greater contacting the delta during the open-water months. In addition, the low number of oil spills expected during the production life of the Sale 97 leases is unlikely to change the size of the regional fish populations enough to affect subsistence. Consequently, this analysis determined that NEGLIGIBLE effects on Nuiqsut's subsistence harvest are expected.

Response 8-30

Section III.C.3.b(3)(g) has been amended to address this concern.

Response 8-31

This concern is addressed in Response 7-13.

City of Nuiqsut
GENERAL DELIVERY
NUIQSUT, ALASKA 99789

December 17, 1986

Regional Director, Alaska OCS Region
Minerals Management Service
949 East 36th Ave., Room #110
Anchorage, AK. 99508-4302

Attn: Dick Roberts

Gentlemen:

The City of Nuiqsut on behalf of the Nuiqsut Whaling Association would like to submit a written comment due to the non-consideration of our communities whaling activities relating to the EIS for the proposed Oil & Gas Lease Sale 97 in the Beaufort Sea after a public hearing held in Nuiqsut, Alaska on December 11, 1986.

We would like our whaling area which starts at the mouth of the Colville Delta on over to Flaxman Islands with base station(s) at Cross Island to be deferred from any lease sale(s) in the area during fall whaling. 9-1

We would also request that any industrial activities in our area during the bowhead fall whaling migration be stopped, until such time as the Federal Government can study the bowhead whales and complete the current studies being conducted in the Beaufort Sea. 9-2

We realize that much of the area in which our whalers actively subsistence hunt for the bowhead has already been leased or selected for leasing but our community does not wish to be overlooked. We also have an immediate concern with the industrial noise associated with offshore activities which interfered in our 1986 fall whaling hunt. 9-3

The City of Nuiqsut extends our appreciation for the opportunity your panel gave the community during the public hearing held in Nuiqsut for comments and welcomes your panel back to the community for future public hearings concerning our area.

Respectfully,
Maggie Kovalsky
Maggie Kovalsky, Mayor
CITY OF NUIQSUT

MK:jo

cc: Nuiqsut City Councilmembers
Nuiqsut Whaling Captains Assoc.

Response 9-1

The Nuiqsut fall bowhead whale-hunting area was not proposed as a deferral area for the following reasons: (1) as shown in Figure V-1, part of the hunting area lies in waters that are within the State of Alaska's jurisdiction; and (2) some blocks lying within and some blocks near the hunting area already have been leased as a result of past State of Alaska and OCS oil and gas lease sales.

Response 9-2

The EIS analyzes a seasonal drilling restriction stipulation that would prohibit drilling during the bowhead-whale migration.

Response 9-3

This concern is addressed in Response 9-2.

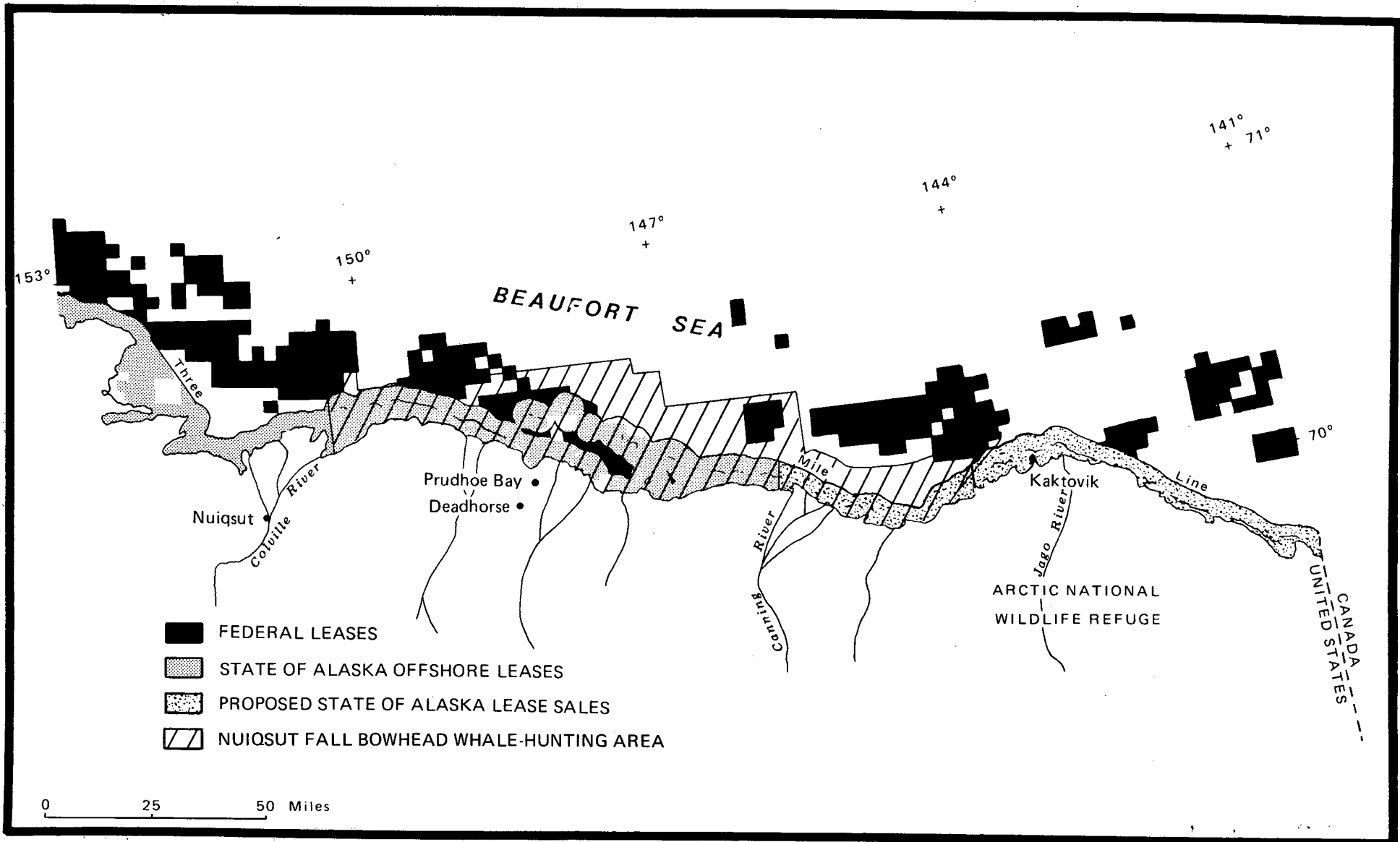


FIGURE V-1. NUIQSUT FALL BOWHEAD WHALE-HUNTING AREA

Alaska Oil and Gas Association

10

Minerals Management Service
January 6, 1987
Page 2

121 W. Fireweed Lane, Suite 207
Anchorage, Alaska 99503-2035
(907) 272-1481

January 6, 1987

Regional Director, Alaska OCS Region
Minerals Management Service
Attention: Dick Roberts
949 East 36th Avenue, Room 110
Anchorage, Alaska 99508-4302

Beaufort Sea Sale 97 DEIS

Gentlemen:

The Alaska Oil and Gas Association (AOGA) is a trade association whose member companies account for the majority of the oil and gas exploration, production and transportation activities in Alaska and the OCS offshore Alaska. Members of our organization have reviewed the Draft Environmental Impact Statement (DEIS) for the proposed Beaufort Sea Sale 97 (January, 1988) and AOGA is pleased to have this opportunity to comment.

AOGA supports Alternative I, making available for leasing 21.2 million acres in January, 1988. Alternatives II-VI would cancel, delay or delete acreage from the proposed sale area, actions we believe would not be in the best interest of the nation. Operations in adjacent sale areas have proven industry's capability to operate safely in the Beaufort Sea.

In general, the Minerals Management Service (MMS) has taken a very objective approach to evaluating the potential effects of industry operations in the Sale 97 area on the living resources of the region. For the most part, "effects" are summarized as MINOR or NEGLIGIBLE, with only a few effects considered to be MODERATE. Appraisals are fundamentally sound and we are in general agreement. The descriptions, discussions and assessments of possible or probable effects on living resources from a variety of influences (oil spills, construction, noise, boats, aircraft, etc.) appear to be objective in most cases.

The DEIS indicates that Stipulation No. 4 Seasonal Drilling Restrictions for Protection of Bowhead Whales from Potential Effects of Oil Spills will be applicable to the Sale 97 area. We urge the MMS to eliminate any such requirement as the stipulation is unnecessary. The DEIS acknowledges in Section IV.A. that significant oilspills in northern Alaska waters are extremely unlikely during exploration drilling. In fact, based on experience, a total of only 8.5 barrels are expected to be spilled, even if 20 exploratory wells are drilled. In addition to the negligible probability that Bowhead whales would be exposed to an oil spill, the effect of oil on Bowhead whales has been overstated in the DEIS. Dr. Joseph Geraci, a doctor of veterinary medicine and PhD in marine science, has conducted exhaustive research on the effects of oil on marine mammals. His work is regarded as the authoritative treatment on the subject. The following two reports by Dr. Geraci and Dr. David J. St. Aubin are attached to these comments, and we request they be included in the record for this DEIS:

"An Assessment of the Effects of Oil on Bowhead Whales,
BALAENA MYSTICETUS"

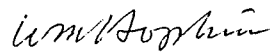
"Effects of Offshore Oil and Gas Development on Marine
Mammals"

Taken together, the low likelihood of oil spills occurring and minimal effects from oil contact support eliminating this stipulation.

Appendix J of the DEIS contains the 1983 Biological Opinion regarding bowhead whales in the Beaufort Sea as related to oil and gas exploration. On Page J-11 is a statement that the FEIS will contain a biological opinion for Sale 97. We request an opportunity to review and comment on this opinion before it appears in the Final EIS.

Attached are our detailed comments on the DEIS. If you have any questions on the attached material, please contact us.

Sincerely,


WILLIAM W. HOPKINS
Executive Director

WWH:MC6:683
Attachments 3

COMMENTS OF THE
ALASKA OIL AND GAS ASSOCIATION
ON
DRAFT ENVIRONMENTAL IMPACT STATEMENT
PROPOSED BEAUFORT SEA LEASE SALE 97

Summary Page

Please note the page number for this page should be xix, not xiv, as shown. 10-3

Summary Page, Second Paragraph

There is a reference here and in several other places in the DEIS (over and above those mentioned in the errata sheet) to the sale being held in July 1987. This sale is now scheduled for January 1988. It should be corrected throughout the DEIS. 10-4

Summary Page, Third Paragraph

The statement about the 1000 barrel oil spill comes across as "fact". Perhaps it could be clarified to say "Analysis indicates that there may be an 82% chance...". 10-5

When discussing potential exploration, development and production scenarios all references to the absolute, such as will, would, must, have to, etc., should be deleted and replaced by may, might, could, etc. We believe this is appropriate in that as you have stated on Page II-1, "there is no single correct development scenario" for this area. The content of the entire EIS should be consistent with this statement. 10-6

Table S-1, Summary of Effects

With regard to the fish and wildlife resources (Resource Categories 1 to 6), these appear to realistically identify the extent of effects that would occur under the most probable conditions. 10-7

With regard to subsistence (Resource Category 9), we believe the level of effects are overstated for Alternatives IV-VI. 10-7

Page II-2, First Paragraph

This paragraph acknowledges that the effects of development events would be overestimated using the accelerated MMS development schedule. The paragraph also states that the effects of some events may be based on total areas and populations affected or quantities produced rather than the rate of development. We urge the MMS to adopt a reasonable development schedule to avoid overstating probable effects. 10-8

Page II-2; b. Exploration Drilling Units, First Paragraph

Add to the end of this paragraph "(5) availability of drilling systems". The numbers and types of units to be used will depend in some cases on market availability. 10-9

Table II-A-1

The BEAUFORT SEA SUMMARY numbers should be reviewed as to consistency. For example, the total Beaufort Sea production should be from 1993-2014, not 1996-2011 as shown. 10-10

Page II-3, First Incomplete Paragraph

It should be noted in this paragraph that the SSDC is presently drilling an exploration well in Harrison Bay. 10-11

Page II-3, Last Paragraph

In the first line, replace the word "shallower" with "deeper". 10-12

Page II-6, a. Timing of Activities

In the first sentence, platform installation would commence in 1992, not 1993, according to Tables II-A-1 and G-4. 10-13

Page II-6, Fourth Paragraph

In lines 5 and 6, the statement is made that each well produces approximately 1,850 tons of drill cuttings. Based on Alaska experience, this amount is high by about 30 percent for a 12,000 ft well. The correct amount would be 1,300 tons. 10-14

Page II-6; b. Production Platforms, First Paragraph

In the second line, change "would be produced" to "may be produced". 10-15

Page II-7, First Complete Paragraph

In the third sentence change "would be constructed" to "can be constructed". 10-16

Page II-8; 4. Activities Associated with Oil Transportation--Mean-Case Resource Estimate, First Paragraph

Add to the end of this single-sentence paragraph "or to presuppose that pipelines are the preferred transportation system in all cases". 10-17

Page II-8, Second Paragraph

The first sentence should be rewritten to read: "Pipelines may be used to transfer hydrocarbons from the production systems to TAP Stations 1 or 3." 10-18

Page II-8, Fourth Paragraph

In the fourth sentence change "dredging depths" to "water depths" and "will be required" to "may be required". 10-19

Delete the last sentence. Stating that a dredge must be U.S. flag is prejudging. For example, if it can be shown that there is no existing U.S. equipment available, foreign flag equipment may be used. 10-20

This section should include a consideration of the fact that specific conditions at the time will dictate the final selection of construction methods and equipment. 10-21

Page II-9

The first complete sentence at the top of the page should be rewritten as: "However, as experience in other areas increases, plowing or dredging systems may be developed that can cut trenches more rapidly or deeper on a single pass, or both." 10-22

Page II-10, Fourth Complete Paragraph

The first sentence of this paragraph should be amended to read: "...will be elevated and/or buried in a manner....". 10-23

Page II-12, Second Paragraph

Add to the end of the third sentence "...or until existing stipulations are no longer deemed necessary.". 10-24

Table II-A-2

This table shows the mean-case resource estimates for Alternates I, IV, V and VI to be 650, 630, 560 and 620 MMBO, respectively. This listing implies that the Barrow deferral (Alternative IV) area contains 20 MMBO, the Kaktovik deferral area (Alternative V) contains 90 MMBO and the Chukchi deferral area (Alternative VI) contains only 30 MMBO. The latter area represents some 3.6 million hectares or about 42 percent of the total proposed sale acreage, while the mean implied resource estimate for this area is only 4.6 percent of the resource estimate for the entire proposed sale area. 10-25

The public might be misled to believe that deletion of these deferral areas might be insignificant because the areas are shown to contain only 3%, 4.6% or 14% of the estimated resources. It would be clearer to emphasize that preliminary estimates of economically recoverable oil in a frontier area are not the undiscounted resource estimate. Deletion of any blocks is not recommended because only the drilling of exploratory wells will determine if oil is indeed present and, given success, could have major resource potential.

Page II-16, Stipulation No. 4

AOGA submits that limitations such as Stipulation No. 4 are not necessary because the chance of any significant oil spill occurring is extremely remote. Over 6,000 exploratory oil and gas wells have been drilled in the U.S. offshore without a blowout which resulted in a major oil spill. Petroleum operations in the Beaufort Sea have resulted in no significant impacts. While industry's record is excellent, the regulatory scheme has been tightened even further. The Alaska OCS operating orders are the most exacting requirements found anywhere in the world. Further, industry has developed and demonstrated the ability to respond adequately to oil spills that may occur in broken-ice conditions. This ability has been the subject of extensive analysis, including demonstrations of clean-up capability in broken ice. 10-26

Further, the effect of oil on Bowhead whales has been overstated. The skin of Bowheads, which is thicker than other marine mammal skin, is not likely to be adversely affected by contact with oil. Ingestion of oil by Bowheads, while possible, is unlikely to occur in volumes which would endanger the whale either because of toxicity or reduced food intake. Because of whale migration patterns, whales are not likely to be exposed to oil during conditions which could lead to serious harm. 10-28

Stipulation No. 4 is no longer necessary in the form presented in the Beaufort Sea Sale 97 draft EIS. Industry operations and research conducted in the Sale 87 area during the fall of 1986 have shown that such restrictive regulation is unnecessary to protect the Bowhead whale from oil spills, noise, etc., and to preserve subsistence usage. The attached documents provide additional scientific data supporting this statement. Based on technological and scientific evidence, Stipulation 4 should be dropped from the lease conditions. 10-29

Page II-19 Stipulation No. 5

This stipulation expresses a preference for pipelines for the transportation of crude oil. The selection of the means of transporting crude should be left flexible enough that all means can be considered equally at the time a transportation system is needed. Economics should be the primary criteria, as long as the option is environmentally acceptable.

10-30

Page III-2; (3) Mudslides

The information in this paragraph should be referenced.

10-31

Page III-8; Third Complete Paragraph

The velocities presented in the last sentence are inconsistent.

10-32

Page III-74

Change the last sentence to read: "...regional air quality still is within National and State...".

10-33

Chapter IV (general)

Discussions of development scenarios frequently mention Point Belcher and Bullen Point. None of the maps in the DEIS show any of these features. It would be helpful to the reader to locate these points on the large fold-out graphics.

10-34

Page IV-A-3 Oil-Spill-Risk Analysis

The inclusion of Canadian crude oil, produced and tankered to the west, is acknowledged as an extremely tenuous estimate of events on page IV-A-3, first incomplete paragraph. However, this "tenuous" estimate is carried forth in all presentations of cumulative case spill probabilities and it accounts for 50% or more of the probability of an oil spill. If an "extremely tenuous" factor has that much effect on the statistical results presented throughout the EIS, at a minimum, the factor's qualified significance should be noted by footnote wherever it plays a part in establishing the probabilities cited, i.e., in tables as well as the text. More appropriately, if the Canadian crude factor must be considered in the Sale 97 EIS, then it should be presented as a separate case of cumulative impact. This would clearly display the possible impact in the remote chance Canadian crude activity became a factor. At the same time, it would establish a cumulative impact case for use in the EIS which would represent the more likely case.

10-35

It is suggested that tables which include cumulative spill data be modified to include cases with and without the Canadian factor.

It is further suggested that the text include the figures from the case without the Canadian factor.

Page IV-A-7, Last Paragraph

A statement is made in the last paragraph on Page IV-A-7 which suggests that a significant mitigating factor for spills on land fast ice is dismissed in this EIS because the model which was used would not accept it. If it is true that the model cannot adequately portray a winter spill, then the authors should adjust the results appropriately with suitable correction factors.

10-36

Clearly an oil spill on solid, land fast ice is amenable to virtually complete clean-up leaving little to no threat of environmental damage. This fact should be considered in any statistical estimate of likely land contact of oil spilled on ice rather than being dismissed because a "more complex winter model" cannot handle this factor. Impacts of spills from platforms would be significantly reduced in land fast ice areas. This would have a major influence on determining the likelihood of land contact of a winter spill as displayed in Figure IV-9. That is, the near shore (more likely to be land fast ice) conditional probability isobars show the higher probability of land contact. If the oil from these spills could be removed before meltout, these isobar values would have to be reduced.

It is suggested that at some point in the development of the Combined Probabilities shown in Table IV-A-6 a factor which recognizes the diminished likelihood of land contact from oil spills on land fast ice be incorporated.

Page IV-A-17; 3. Constraints and Technology

This section is very repetitive of Sections II-A-2 through II-A-5 except for the greater consistency and fewer unnecessary constraints exhibited in Section IV-A-3. We recommend either deleting Sections II-A-2 through II-A-5 and replacing them with Section IV-A-3 or making all the sections more consistent in content. We note that the words "Basic Assumptions For Effects Assessment" are used in the sub-titles which introduce both Sections IV-A and II-A. We feel that if these basic assumptions need be repeated they should be reasonably consistent in each repetition.

10-37

Page IV-A-18; a. Sea Ice

For clarity, change the third sentence to read: "...the strength, size and shape of the ice...". Change the fifth sentence to read: "...well before the theoretical ice loads on the structure are reached.". Add to the end of the paragraph: "Sea ice can affect construction and resupply operations."

10-38

10-39

Page IV-A-18, Fourth Complete Paragraph

In the last sentence delete the words "at least partially". 10-40

Page IV-A-19, First Paragraph

In the second sentence, delete "and then joined". Not all caisson-retained islands require a joining operation. 10-41

Insert a new third sentence to read: "The caissons are then filled with sand or gravel, constituting a caisson-retained island." 10-42

Page IV-A-19, Fourth Paragraph

In the fifth sentence, the reference to water depth at the Prudhoe Bay spray ice island site is incorrect and should be changed from 9 meters to 7.6 meters. Additionally, this site was in Harrison Bay approximately 100 miles northwest of Prudhoe Bay. 10-43

Page IV-A-19, Last Paragraph

This paragraph should be updated to include 1986 information. Change to read as follows:

"Ice-strengthened drillships have been used to drill exploratory wells in waters deeper than 20 meters in the Canadian Beaufort Sea since 1976. On the average, drilling and testing a single well from a drillship in the Canadian Beaufort has taken nearly two drilling seasons. With assistance of icebreakers or icebreaking supply boats, the drillships were able to operate from about mid-July to mid-October or the first part of November. The drillships are designed to operate in waters that range from 15 to 303 meters. One of the Canadian ice-strengthened drillships was used to drill two exploration wells at a site 19 kilometers north of Flaxman Island in waters 32 meters deep and one exploration well about 32 kilometers northwest of Barter Island in the Alaskan Beaufort Sea. The drillship was supported by an Ice Class 3 icebreaking supply vessel and two ice-class supply vessels in the 1985 and 1986 summer drilling seasons." 10-44

Page IV-A-20, First Paragraph

Change second sentence to read: "...ages, concentrations and vectors." 10-45

Page IV-A-21; (3) Transportation

We commend the MMS for recognizing that a combination of pipelines and tankers may be used for petroleum transportation. This broad approach should be maintained consistently throughout the EIS. 10-46

Page IV-A-21; (a) Offshore Pipelines, First Paragraph

In the last line delete "the best". 10-47

Page IV-A-24 Fifth Complete Paragraph

We suggest rewording activity (3) to: "placement and operation of bottom-founded gravity structures". We suggest rewording activity (4) to: "constructing artificial islands and berms". 10-48

Page IV-A-26; (3) Waves, Currents and Storm Surges -- Flooding and Erosion

In the third sentence change "an extreme" to "the result of a". 10-49

Page IV-B-11, Fourth Paragraph

The statement that epibenthic organisms have a moderately high probability of being contacted by an oil spill is contradicted by the next sentence that says the probability of oil contacting the subtidal sediments is low. 10-50

Page IV-B-24; (4) Construction Activities, First Paragraph

In the text there are considerable assumptions that there will be cumulative effects from causeways. There is no evidence that causeways have had impacts on fish populations. These assumptions seem to arise from personal communications and are not supported by the extensive data base collected on Beaufort Sea causeways.

While there may be some localized distributional changes of some fish, there is no evidence that the West Dock Causeway has affected the "abundance of anadromous fishes in the Beaufort Sea". There are no data to support a theory that young-of-the-year arctic cisco traditionally overwinter first in the Sag River then in the Colville River. In fact, in 1985, with two causeways in place, these first year arctic ciscos made it all the way to the Colville River. 10-51

The salinity-temperature alterations due to the Prudhoe causeways are due to the changes in current patterns, are localized and transient, and depend on which way the wind blows (current being a function of wind in these nearshore shallow waters). However, the wording in this Draft EIS implies something more substantial than this. Several years of study (including the 1981-84 Prudhoe Bay Waterflood studies, 1985 Endicott studies, and 1985 Colville River fish studies) have shown that fish of all sizes (from young-of-the-year to large, sexually mature, adult anadromous fish) are able to survive and migrate through the area.

Page IV-B-90; Third Paragraph

The second sentence states that a pipeline and roads would disturb caribou. There are already major pipelines from Oliktok Point to TAP and another wouldn't cause any more disturbance than the others.

10-52

Page IV-B-93; Last Paragraph

The statement "Since the scenario assumes that a pipeline from Oliktok Point to the TAP would be offshore..." contradicts the statement on Page II-9, third paragraph, which specifies onshore pipeline from Oliktok Point to TAP.

10-53

Page IV-B-105; (c) Energy Facilities (6 AAC 80.070)

We must object to the second sentence of this section which states: "Because of the unique terrain, ownership patterns, and land use patterns of the NSB, not all 16 policies are appropriate.". This curious interpretation of the Alaska Coastal Management Program is consistently followed throughout this section to the second paragraph on page IV-B-113, as a number of oil and gas activities are held to be "in conflict" with various policies of 6 AAC 80.070. We offer the following comments:

10-54

1. 6 AAC 80.070 lists 16 standards (not "policies").
2. These standards are not prohibitions, but are clearly modified by 6 AAC 80.070(b), which states: "The siting and approval of major energy facilities...must be based, to the extent feasible and prudent, on the following standards:". This leaves latitude for the state to negotiate siting plans and mitigation procedures with a developer. Arctic oil and gas development has proceeded under the ACMP since its inception in 1978, and we see no reason for future development to deviate from that course.

Page IV-B-112; First Full Paragraph

The second sentence states: "Causeways extending offshore could increase risks to anadromous fishes to major."

We believe that statement to be erroneous. It has been ARCO's and Standard's experience that the causeways at West Dock and at Endicott have not prevented the migration of fish, nor have they caused any detectable mortality. The only DEIS reference in support of the subject sentence is personal communication from Craig Johnson of NMFS, who observed an increase of arctic cisco in Prudhoe Bay following construction of the West Dock causeway (IV-B-24). Rather than "stalling" fish east of the causeway, an alternative explanation is that perhaps a local, more attractive habitat has been created by the causeway, and that the arctic cisco population has actually increased.

10-55

Page IV-B-122; Fourth Paragraph

We recommend the statement "water quality criteria cannot be exceeded at greater than a 100 meter distance from the discharge point" should be revised to "water quality criteria must be met at the edge of the mixing zone established by the EPA issued discharge permit".

10-56

Page IV-D-1 Alternative III - Delay of Sale

Industry has the technology and equipment available now to safely explore the Beaufort Sea and is confident that it can do so without significant adverse environmental effects. Proceeding on schedule with this lease sale in 1988 will present no more hazard to the environment than would waiting until 1990 to conduct the sale as is considered in Alternative III. The DEIS states "Although additional information would be useful, MMS has successfully used the existing data base in the past to provide an adequate analysis of the consequences of oil and gas activities...". It is unlikely that any significant changes in the analysis or conclusions would result from new information which would be collected during this two-year period. Therefore, we find no compelling reason to delay this sale, which has already been postponed five times.

Pages IV-H-1 through 3; Section IV H. Unavoidable Adverse Effects

This section should not include the effects of highly unlikely worst case incidents as "unavoidable adverse effects". In April, 1986, NEPA/EIS guidelines were changed from requiring worst case assessment to that of "most likely to occur". Examples of worst case are found in H. 1., 2. and 6. where conclusions of MODERATE effects are reached.

10-57

Page IV-H-3; 14. Air Quality

It is not clear how the conclusion was reached that there is "MODERATE" degradation of air quality in the Unavoidable Adverse Effects section given in Part H. The alternatives discussed may cause "MINOR" degradation of air quality as expressed in Parts E-G of Section IV (See Page IV-B-127). The Unavoidable Adverse Effects of air quality degradation should also be considered as "MINOR".

10-58

Page G-1, Table G-1

The Schedule for the Low-case does not provide for the drilling of exploratory wells.

10-59

Page G-4, Table G-8

The resource estimates for the BF/Beaufort Sea Sale held in 1979 and OCS Sale 71 should be reduced to reflect exploration activities since the sales.] 10-60

Response 10-1

MMS acknowledges and is encouraged by industry's efforts to explore in a safe and environmentally sound manner such as during the 1986 fall bowhead migration. Furthermore, the EIS acknowledges the low probability of bowheads contacting spilled oil or being harmed through such contact. However, there remains a small probability that a major oil spill could occur and contact bowhead whales. Should bowheads be trapped or linger in an area--such as a lead or polynya--into which a large volume of crude oil or refined product is spilled and thus be forced to repeatedly surface through this oil, there is a potential for harm to these individuals.

The bowhead is of utmost importance to Native subsistence hunters and is an endangered species. As such, any unauthorized take is a violation of the Marine Mammal Protection Act and Endangered Species Act of 1973, as amended; and, as noted in Section II.B.1.a(2), ITL Number 1, the term "take" has been defined to include harm. Adoption of Stipulation Number 4 would provide a means of protecting the bowhead whale by eliminating the risk of an oil spill contacting and potentially harming bowhead whales as they migrate through Alaska waters.

Final reports are being prepared to document the monitoring effects for bowhead whales in the vicinity of exploratory-drilling operations in the Beaufort Sea during 1985 and 1986. The information in these reports will be used by (1) the MMS to analyze the effects of exploration drilling on migrating bowhead whales and evaluate the effectiveness of mitigating measures such as Stipulation Number 4 in protecting the whales and (2) the Secretary of the Interior in considering what measures, if any, are necessary to protect the whales and should be included in any lease agreements.

Response 10-2

This concern is addressed in Response 7-13.

Response 10-3

The referenced page number has been revised.

Response 10-4

The sale date has been revised.

Response 10-5

The text in the Summary has been amended to address this concern.

Response 10-6

Because verbs assume a different mood when they are used conditionally and/or subjunctively, the verbs will, would, must, have to, etc., do not necessarily connote a reference to the absolute. Strunk and White (1979), for example, advise saving conditional use of the auxiliaries would, should, could, may,

might, and can "for situations involving real uncertainty." See also Bernstein (1981), who states that "The subjunctive mood of a verb is the form associated with condition, command, wish, doubt, desire, possibility, etc."

The subjunctive mood is not popularly used today as a form evidenced by an identifiable verb change, with four exceptions. The latter of these--to express conditions that are merely hypothetical (Bernstein, 1981)--is a necessary usage in EIS writing.

A potential for error is an inconsistency of moods in the protasis (condition) and apodosis (consequence). However, the referenced statement on page II-1 and other similar statements and disclaimers throughout the EIS (see especially the disclaimer on the inside front cover) adequately set the stage, or condition, for the discussions of assumed scenarios (and also potential environmental consequences).

Response 10-7

The levels of effect for subsistence harvests are different than those for biological resources because of different methods of analyses. The analysis of biological resources examines the effects on the entire population of the resource, while the subsistence-harvest analysis only examines the effects on a potentially small portion of the population--these effects are often localized. If an oil spill were to occur in the only place where a resource is harvested and during the primary month when a resource is harvested, then that harvest could not occur for the entire year; this would be a MODERATE effect. If this happened more than 1 year, the effect would be MAJOR. Thus, even though an oil spill might not have more than MINOR effects on the biological population, it could have a higher level of effect for subsistence harvests. Similar logic applies to noise and traffic disturbance, construction activities, and facility sitings. Within the subsistence harvests, these levels of effects also vary according to whether or not the harvest occurs during a short timeframe or throughout the year, in many places, or in high or low numbers.

Response 10-8

MMS has revised the estimated schedule of events for petroleum exploitation in the Sale 97 leased areas. The scenarios are now based on a 12- to 13-year period between the beginning of exploration and the start of production. Tables II-A-1 and II-A-2; IV-A-1; and Appendix G, Tables G-1, 2, 3, 5, 6, and 7 have been revised accordingly.

Response 10-9

Section II.A.2.b has been amended to address this concern.

Response 10-10

The information in Table II-A-1 has been amended to reflect a revised schedule of activities.

See Response 10-8.

Response 10-11

The text in Section II.A.2.b has been revised to address this concern.

Response 10-12

Section II.A.2.b has been revised to address this concern.

Response 10-13

The text has been amended to reflect a revised schedule of activities.

See Response 10-8.

Response 10-14

The quantity of cuttings from drilling exploration and delineation wells, Section II.A.2.d, and production and service wells, Section II.A.3.a, has been revised; see Table II-A-1.

Response 10-15

This concern is addressed in Response 10-6.

Response 10-16

This concern is addressed in Response 10-6.

Response 10-17

This concern is addressed in Section II.A.1.

Response 10-18

This concern is addressed in Response 10-6.

Response 10-19

Dredging depth refers to the depth below the water surface that the dredge head can be extended and cut into the seafloor. Water depth is the depth from the water surface to the seafloor surface.

Also, see Response 10-6.

Response 10-20

The text in Section II.A.4 has been revised to address this concern.

Response 10-21

This concern is addressed in Section II.A.1.

Response 10-22

Section II.A.4 has been amended to address this concern.

Response 10-23

Section II.A.4 has been amended to address this concern.

Response 10-24

The text in Section II.B.1.c has been revised to address this concern.

Response 10-25

The information presented in Table II-A-2 and the discussion of the potential oil resources for the deferral alternatives notes that the quantities mentioned are estimates. Unfortunately, the presentation of any number associated with a process requiring subjective judgments and estimates can be misleading to those not familiar with the methodology. An attempt to alert the reader to the uncertainty of these estimates is presented in Section II.A.1.

Response 10-26

This concern is addressed in Response 10-1.

Response 10-27

Industry has demonstrated the capacity to mobilize and deploy cleanup equipment in broken ice within the landfast-ice zone in summer, in open water in summer, and on landfast ice in winter. However, industry cannot guarantee that spilled oil would be consistently and quantitatively recovered in real spills--for example, no oil was recovered from the Minuk I-53 exploration spill of 2,440 barrels in September 1985 (Birchard and Nancarrow, 1986) in the Canadian Beaufort Sea.

Response 10-28

This concern is addressed in Response 10-1.

Response 10-29

This concern is addressed in Response 10-1.

Response 10-30

The wording in this stipulation does not prohibit the use of other methods of hydrocarbon transportation or the use of offshore loading, providing that the conditions identified in the stipulation cannot be met. Economic feasibility is one of those conditions. The referenced wording, ". . . following the

development of sufficient pipeline capacity," as well as other parts of the stipulation, point out what will be required if pipelines are utilized. The first paragraph states that pipelines will be required "if . . . technologically feasible and environmentally preferable . . ." The last sentence of this paragraph states, "In selecting the means of transportation [of hydrocarbons], consideration will be given to recommendations of the Regional Technical Working Group . . ." The above wording recognizes that an option is available to the operator regarding the type of hydrocarbon transportation that may be used.

Response 10-31

Section III.A.1.b(3) has been amended to address this concern.

Response 10-32

Section III.A.3.a(3) has been amended to address this concern.

Response 10-33

The text in Section III.D.6 has been clarified.

Response 10-34

Point Belcher and Bullen Point have been added to Graphic 6.

Response 10-35

Only 18 percent of the oil resource estimated to be in the Canadian Beaufort Sea/MacKenzie Delta area is assumed to be tankered through the U.S. Beaufort Sea. This Canadian tankering to the west is no longer a tenuous assumption (see Oil and Gas Journal, 1987). In 1986, the Canadian oil industry tankered 350,000 barrels of crude past Point Barrow, enroute to Japan. Starting in 1988 and continuing until a pipeline south is completed, Canadian tankers will make about seven trips each year during a 5-month "open-water" window, carrying crude to market in Asia. In the oil-spill-risk analysis, Canadian tankering contributes only 2.6 percent of the spills of 1,000 barrels or greater in the cumulative case. Almost all of the spill risk from Canadian activities in the cumulative case is from production and piping of oil in Canadian waters. The trajectory analysis indicates that these platform and pipeline spills would enter U.S. waters. A footnote has been added to Table IV-A-4 to clarify that tankering contributes little spillage to the Canadian portion of the cumulative case.

Response 10-36

The oil-spill-trajectory model simulates movement of the center of mass of oil slicks and adequately simulates winter trajectories. Consideration of cleanup of oil spills in a trajectory model is secondary to the establishment of the best and most accurate simulation of oil movement. Incorporation of the assumption that platform spills in landfast ice would be cleaned up prior to the open-water season would reduce effective spillage in the oil-spill-

trajectory model by 0.07 spills, a decrease of less than 4 percent. That the differing treatments of platform spills in landfast ice in the FIS's for Sales 97 and 87 have negligible effect on combined probabilities has been clarified in Section IV.A.1.c.

Response 10-37

In Section II.A, the scenarios that may be used to explore, develop and produce, and transport the oil resources of the Sale 97 area are discussed. Based on the resource estimates, the scenarios include an estimate of the level of activities, such as the number of exploration wells that may be drilled, the number of production platforms installed, and the length of pipelines installed. The scenarios also include a table showing a hypothetical schedule of events. Section IV.A.3 is primarily a discussion of those factors of the physical environment that may constrain petroleum exploitation in the Beaufort Sea Planning Area. A discussion of the technologies that have been or may be used in the Beaufort Sea has been added to acquaint the reader, who may not be knowledgeable about the area, with the technologies and strategies being developed to overcome the constraints.

Response 10-38

The text in Section IV.A.3.a has been revised to address this concern.

Response 10-39

The first sentence in Section III.A.3.a notes that sea ice is the principal environmental factor affecting offshore development of petroleum resources in the planning area. Construction and resupply operations are assumed to be part of the offshore development of the resources.

Response 10-40

Section IV.A.3.a(1) has been amended to address this concern.

Response 10-41

Section IV.A.3.a(1) has been amended to address this concern.

Response 10-42

Section IV.A.3.a(1) has been amended to address this concern.

Response 10-43

The information on the test spray-ice islands is correct according to the reference cited. Additional information on the spray-ice island in Harrison Bay has been added to the discussion in Section IV.A.3.a(1).

Response 10-44

Section IV.A.3.a(1) has been amended to address this concern.

Response 10-45

Section IV.A.3.a(1) has been amended to address this concern.

Response 10-46

Tankers are mentioned in Section IV.A.3.a(3)(b) as a possible alternative oil-transportation system to the pipelines.

Response 10-47

Section IV.A.3.a(2) has been amended to address this concern.

Response 10-48

Section IV.A.3.b(1) has been amended to address this concern.

Response 10-49

The text in Section IV.A.3.b(3) has been amended to address this concern.

Response 10-50

Section IV.B.1.b(1) has been amended to address this concern.

Response 10-51

The text in Section IV.B.2(b)(4) has been amended to address the concerns stated and to include information that has become available since publication of the DEIS.

Response 10-52

Further discussion of the disturbance of caribou that might result from the pipeline from Oliktok Point to TAP has been added to Section IV.B.9.b(2). It should also be noted that this referenced paragraph states that "such disturbance would last only during the construction season."

Response 10-53

Section IV.B.9.c(2) has been amended to address this concern.

Response 10-54

The standard for energy-facility siting in Section IV.B.11.a(2)(c) has been clarified as suggested.

Response 10-55

Conclusions for biological and sociocultural effects used in the section on land use and coastal management programs is derived from other sections in this EIS. Support for the statement that causeways pose a threat to anadromous fish is found in Section IV.B.2.b(4).

Response 10-56

The text has been amended as suggested--see Section IV.B.14.a.

Response 10-57

The analyses objected to in Sections IV.H.1 and 2 are not worst-case assessments, rather they are extensions of the most likely case that include events or effects somewhat less likely to occur because of timing of events or particular locations of spills or other activities.

Section IV.H.6 does not conclude that MODERATE unavoidable effects would occur but instead only states that MODERATE effects are possible. The conclusion is that MINOR effects are likely.

Response 10-58

The text in Section IV.H.14 has been corrected to change "MODERATE" to "MINOR." The use of the word "MODERATE" was an oversight in this case.

Response 10-59

As noted in Table G-1, the schedule does provide for the drilling of two delineation wells.

Response 10-60

The resource estimates shown in Appendix G, Table G-8, for each of the three previous Beaufort Sea lease sales--BF, 71, and 87--are the mean-case resource estimates used in the analysis of the proposed action for each sale's FEIS. As noted in Table IV-A-7, all previous Federal offshore lease sales in the Beaufort Sea are considered to be a single major project in the cumulative-effects assessment; thus, the resource estimates are not revised for each previous sale. However, the resource potential for all the areas offered for leasing in Sales BF, 71, and 87 is estimated to be 600 MMbbls; Appendix G, Table G-8.



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Regional Land Manager
December 31, 1986

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Written Comments
Draft Environmental Impact Statement
OCS Sale 97
Beaufort Sea, Alaska

Dear Mr. Powers:

Thank you for affording Amoco Production Company the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for OCS Sale 97. We look forward to continued participation in the pre-sale planning process for this and other Alaska OCS sales.

The OCS Lands Act Amendments of 1978 call for the expeditious assessment and development of the oil and natural gas resources of the Outer Continental Shelf. Amoco Production Company regards area-wide OCS Lease offerings and efficient exploratory drilling as fundamental components of a policy designed to implement the purposes and objectives of this statute. The Minerals Management Service can help provide for a secure domestic resource base by ensuring that all areas of hydrocarbon potential are offered for leasing and by providing for the conduct of efficient exploratory drilling.

Amoco supports the MMS proposal to offer all 3,930 blocks for leasing at OCS Sale 97 in January, 1988 (DEIS Alternative I, The Proposal). The cancellation, delay, and sub-area deferral options (Alternatives II-VI) detract from implementation of the OCS Lands Act Amendments mandate and fail to take into account our industry's record of conducting operations in an environmentally sound manner.

Development of hydrocarbon resources in the Beaufort Sea will require many years of work. The Minerals Management Service should encourage efficient exploration in an effort to limit these long lead times. In this regard, Amoco believes that perpetuating the constraints contained in proposed Stipulation No. 4 "Seasonal Drilling Restriction for Protection of Bowhead Whales from Potential Effects of Oil Spills" would seriously hinder efficient exploratory drilling. The requirements of existing OCS operating

11-1

Mr. Alan Powers
December 31, 1986
Page Two

EFFECTS OF OIL ON BOWHEAD WHALES

orders, together with the harsh and remote environment, demand that only the best available and safest technology be used in Alaskan offshore drilling operations. Stipulation No. 4 should therefore be deleted from Sale 97 leases.

In the extremely unlikely event that a significant spill would occur, we still maintain that Stipulation No. 4 is unnecessarily restrictive. Recent research concludes that the potential effect of oil and noise on bowhead whales has been overstated (see Attachments 1 and 2). Drs. J. R. Geraci and D. J. St. Aubin are authorities on the subject of marine mammals. This research was provided to the State of Alaska, Department of Commerce, and Department of the Interior in 1985 and early 1986. Industry exploration activities in the Beaufort Sea in recent years have been conducted in an environmentally safe manner with no apparent adverse effects to the bowhead whale or subsistence hunting. During exploratory drilling and seismic operations in the Beaufort Sea this past season (1986), the villages of Kaktovik and Nuiqsut were successful in taking four bowhead whales (of their total allocation of five).

It is important to note that Stipulation No. 4 was predicated on a 1983 biological opinion which has been rendered out-of-date by recent research efforts and which did not conform with the consultation requirements of Section 7 of the Endangered Species Act.

In conclusion, Amoco Production Company strongly supports offering the entire sale area for leasing (DEIS, Alternative I). We also consider proposed Stipulation No. 4 to be an unnecessary impediment to exploratory drilling, based on our industry's safety record and on the findings of recent research, and recommend its deletion from Sale 97 leases.

Very truly yours,



Gary W. Chipman

TRM/drh

The attached paper makes it clear that the effect of oil on bowhead whales has been overstated. It concludes that whales can be expected to avoid oil spills, and to avoid breathing toxic fumes. The skin of bowheads, which is thicker than other marine mammal skin, is not adversely effected by contact with oil and/or petroleum and will protect the animal. Ingestion of oil by bowheads, while possible, is unlikely to occur in volumes which endanger the whale either because of toxicity or reduced food intake. Because of whale migration patterns, whales are not likely to be exposed to oil during conditions which could lead to serious harm.

Dr. Joseph Geraci, a doctor of veterinary medicine and Ph.D in marine science, has conducted exhaustive research on the effects of oil on marine mammals. His work is generally regarded as the authoritative treatment of the subject.

At Amoco's request Dr. Geraci and his associate David St. Aubin have synthesized the existing knowledge to determine, to the extent known, the effect of oil on bowhead whales. That paper follows. At the conclusion of the paper are detailed curriculum vitae of Dr. Geraci and Mr. St. Aubin.

11-2

Response 11-1

This concern is addressed in Response 10-1.

Response 11-2

This concern is addressed in Response 10-1.