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Unfortunately, our experience in the Prudhoe Bay area over the past decade suggests that maintaining the functional integrity of caribou summer range might not be possible, given the widespread surface use requirements for oil and gas development. Overall caribou density within the oilfield complex is considerably lower than in adjacent areas, and cows and calves are not present in normal numbers. Apparently, industrial growth of the area has also greatly restricted the east-west summer movements of caribou. In the late 1960's and early 1970's, several authors reported the passage of large groups (i.e., in the thousands) through what is now the main oilfield complex. Since the late 1970's, however, there has been little movement of caribou through this complex. The known movements of numerous radio-collared caribou confirm this observation.

Recent observations suggest that CAH caribou are experiencing difficulty gaining access to various components of summer range within the Kuparuk and Milne Point oilfields. As oil development in the region continues to expand and intensify, large portions of habitat may become inaccessible. Thus far, however, caribou have continued to occupy the general region in moderate numbers, despite localized abnormalities in distribution and the impediments to movement posed by an increasingly complex system of roads and pipelines. But the future is uncertain with respect to continual use of this portion of CAH summer range.

Population size

The CAH has undergone rapid growth during the period of oil development in the Prudhoe Bay area--from 6,000 in 1978 to an estimated 16,000 at present, in spite of the affects on habitat use discussed above. The following factors may account for the increase in herd size:

1. Only a small percentage of the total calving and summer range has been affected to date, and it appears that suitable alternative areas remain available.
2. Wolves, a major predator of caribou, were sharply reduced in the region in the late 1970's.
3. Hunter harvest has been generally low.
4. Winter weather has been generally favorable.
5. Summer insect activity has been low-to-moderate--at least in recent years.
6. Mitigative measures have been incorporated into the Kuparuk and Milne Point oilfields in the form of modified pipeline configurations, special crossing structures, and some restrictions on traffic.

Favorable environmental factors, some of which are short-term, make it impossible to determine what affect development has had on the long-term health of the Central Arctic Herd.

Experiences with the CAH provide the primary basis for predicting the responses of PCH caribou to oil development. However, we believe that the two herds are not entirely comparable in terms of susceptibility to disturbance, owing to differences in herd size and the distribution of seasonal habitats. In contrast to the apparently numerous habitat options available to the CAH, the PCH has relatively few. Quite simply, with a narrower coastal plain within ANWR, less calving habitat is available to the PCH--an effect that

is compounded further by its greater size. The net result is less flexibility in the use of calving areas. Also, the PCH typically forms huge aggregations in midsummer. These are frequently on the order of 50,000-80,000 animals, far larger than those of the CAH, which tend to number only 3,000-4,000 at maximum. Recent work on the CAH indicates that large groups have considerably more difficulty negotiating roads and pipelines than small groups, but it is impossible to predict at this time how large aggregations of the PCH would react to production facilities, roads and pipelines, and human activity characteristic of oilfields, much less the long-term consequences to the population of serious perturbations in distribution and movements that might occur as a result. Also, the PCH would contact industrial development on the coastal plain for only a brief period each year (i.e., less than 2 months), and might therefore react more strongly to disturbance stimuli than CAH caribou. That is, the PCH may be relatively "naive," and predictions based on CAH responses may underestimate the impacts on caribou within ANWR.

On the other hand, much of the knowledge gained on the CAH over the past ten years should apply rather well to the PCH. For example, there is little reason to expect that the qualitative responses of PCH females during calving will be markedly different from those documented for CAH females; we can anticipate similar avoidance responses to linear structures placed within calving areas. And we now know from work on the CAH that heavy traffic on roads, in close proximity to elevated pipelines, reduces caribou crossing success. Mitigation strategies, such as buried pipelines, road/pipeline separations, and strict traffic restrictions could be effective on both herds.

THE PORCUPINE CARIBOU HERD

The PCH occupies three fairly distinct wintering areas in Alaska and western Canada: The vicinity of Arctic Village and Venetie, the Richardson Mountains, and the Ogilvie Mountains/upper Peel River. In spring, pregnant females move northward along three principal routes, known as the Old Crow, Richardson, and Chandalar routes. The onset of spring migration, the particular route selected, and rate of travel are highly dependent on regional snow conditions and the wintering area occupied. Movements appear to be highly "purposeful," in that cows delayed by adverse snow conditions compensate by subsequently traveling faster (often 20-30 km/day) when conditions improve. The initial destination appears to be a "staging area" along the lower Firth River in Canada, which is often snow-free earlier than other areas to the west. If snow conditions are generally favorable on the coastal plain, cows will continue westward to the main calving area south of Barter Island. Some calving occurs elsewhere on the coastal plain, creating the false impression of a broad continuum of calving activity; but in the overwhelming majority of years for which adequate records are available, a large calving concentration was clearly apparent between the Hulahula and Aichilik Rivers.

After calving, the bulls and yearlings, which had slowly followed the northward progression of snow-melt and "green-up," join the cows and newborn calves. Large mixed aggregations (in the tens of thousands) form on or near the main calving area and move extensively within the coastal plain, frequently under the influence of insect harassment. By mid-July most of these aggregations have moved eastward along the coast into Canada, although variable numbers of caribou move directly through the mountains, thence to midsummer ranges in Canada or on the south slopes of the eastern Brooks Range. In late summer, caribou begin a drift toward wintering areas, completing the annual cycle of movement.

The central issue here is the location and use of a discrete calving area by the PCH. It should be emphasized that the concept of traditional calving areas is not new. Since the 1960's, caribou herds have been identified on the basis of their use of a common calving ground. Such areas have been described for most Alaskan and Canadian herds, and several herds in the Soviet Union as well. The available data on many herds indicate that there are areas of concentrated calving within traditional calving grounds. Those concentration areas occupied most frequently in high density are known as "core" calving areas.

The survey methodologies employed over the years have been extremely variable in terms of timing, overall effort, type and number of aircraft used, and the availability of radio-collared caribou. Also, many early surveys yielded data that are of marginal usefulness in addressing the present issue. Surveys since 1982 were designed for the express purpose of closely monitoring movements, determining actual calving sites, and delineating calving concentrations. We now routinely employ satellite-tracking technology and conventional radio-telemetry techniques as integral components of our field program.

In spite of recent improvements in our surveillance capabilities, virtually all data on PCH calving distribution are principally qualitative and descriptive. Some progress has been made in quantifying the occurrence of caribou in various areas, but precise density figures are still lacking, and boundaries are based largely on subjective judgment.

A second problem lies in the dynamics of the calving process itself, in that a changing situation is extremely difficult to describe using point-in-time measurements. Calving occurs continuously over roughly a two-week period, during which an individual female caribou may be both highly mobile and nearly sedentary. Thus, at any given time during the calving period, some pregnant females are enroute to actual calving sites, others with new calves are relatively stationary, and still others with older calves may be undergoing moderate movements characteristic of the post-calving phase. For this reason, survey results obtained early in the calving period may be more a reflection of movements into calving areas than the distribution of caribou during calving per se; similar errors are likely if surveys are conducted too late in the calving period.

Such problems in the design and timing of surveys, together with other unknowns regarding the completeness and quality of coverage, place severe limitations on reinterpreting much of the early information on calving distribution of the PCH. In fact, considerable care must be taken to avoid refining the analyses beyond the inherent precision of the original data. These and other restrictions preclude a totally precise delineation of calving concentrations for any given year.

Nevertheless, consistencies in calving distribution do emerge when 16 years' data are superimposed graphically. Even the most cursory examination reveals a clear pattern of recurrent--albeit not exclusive--use of the Jago Uplands, between the Hulahula and Aichilik Rivers (Fig. 3). In more than 90% of the annual observations, this area included a calving concentration. Furthermore, in more than 60% of the years for which estimates of relative caribou abundance were reported, the Jago Uplands supported more calving caribou than any other area within the PCH range (Table 1).

The "core" calving area, as defined in the draft 1002 report, lies within the Jago Uplands. The core area

describes the zone of heaviest use for calving, based on a thorough examination of all available data. In addition, participants at a 1985 caribou workshop sponsored by USFWS agreed that this core area best describes a common zone of concentrated calving activity, and that it is of sufficient size to accommodate the majority of calving caribou in the herd.

Recurrent, heavy use of certain calving areas implies a strong preference, and the persistence of such a tradition implies a net benefit to the herd in terms of calf production and survival. Among the possible attributes of calving concentration areas are:

1. A relative scarcity of predators.
2. Early snow ablation with locally advanced forage availability.
3. Proximity to insect relief habitat.

Most likely, several factors are instrumental in sustaining an affinity for certain specific calving areas, and all may not be important in a given year. It is conceivable that, from an evolutionary point of view, the tradition is retained primarily to offset the effects of exceptionally adverse conditions, perhaps in the form of heavy predation or deep snow during the previous winter; the periodic advantages derived from certain habitats would therefore tend to buffer fluctuations in the herd. The overall benefits to the PCH may be extremely subtle, but nonetheless important to the long-term well-being of the population.

INFORMATION NEEDS

The State has recommended that leasing in the core calving area be deferred for a ten-year period. During this moratorium, a research program would be undertaken that consists of four main components:

1. To evaluate the physical and biological characteristics of core and peripheral calving areas; features such as the vegetation, topography, meteorology, predator abundance, predation rates, and caribou use would be compared between core and peripheral areas.
2. To evaluate the effects of oil development on caribou calving distribution; because oil development would not occur within the core calving area of the PCH, this evaluation would rely on the continuation of the long-term study of the CAH, and especially the responses of calving caribou to continued development in the Kuparuk oilfield.
3. To evaluate the effects of oil development on insect-induced movements, particularly movements of the extremely large groups that commonly occur in the PCH; this component would focus on the responses of such large groups to a simulated transportation system, as well as analyzing the bioenergetics of such movements.
4. To characterize the caribou harvest in villages within the range of the PCH, principally Kaktovik and Arctic Village; this baseline information would be used in evaluating the effects of oil development on subsistence use of caribou.

We believe that the results of this research program would improve our understanding of the importance of the core

calving area to the PCH, and would improve our ability to predict the potential effects of oil development on the herd, thereby providing a more informed basis for recommending mitigative measures.



TESTIMONY OF DR. ALVIN G. OTT
BEFORE THE SENATE COMMITTEE
ON ENERGY AND NATURAL RESOURCES
October 13, 1987

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

MY NAME IS DR. ALVIN G. OTT. I AM THE REGIONAL SUPERVISOR OF THE HABITAT DIVISION WITH THE ALASKA DEPARTMENT OF FISH AND GAME IN FAIRBANKS, ALASKA.

THE TESTIMONY PRESENTED TODAY FOCUSES ON OIL AND GAS EXPLORATION AND PRODUCTION IN THE 1002 AREA OF THE ARCTIC NATIONAL WILDLIFE REFUGE (ANWR), AND SPECIFICALLY HOW ENVIRONMENTAL IMPACTS FROM LARGE SCALE DEVELOPMENT PROJECTS CAN BE MITIGATED BASED ON EXPERIENCES WITH OIL AND GAS PRODUCTION ON THE NORTH SLOPE OF ALASKA. THE STATE OF ALASKA HAS CONSIDERABLE EXPERTISE, PARTICULARLY THE ALASKA DEPARTMENT OF FISH AND GAME (ADF&G), IN TERMS OF POTENTIAL IMPACTS TO FISH AND WILDLIFE RESOURCES AND ACCEPTABLE MITIGATION WITH RESPECT TO OIL AND GAS EXPLORATION AND PRODUCTION.

IT IS IMPORTANT TO RECOGNIZE THE SCOPE AND MAGNITUDE OF OIL PRODUCTION, AS CONTRASTED WITH EXPLORATION. THE STATE OF ALASKA'S COMMENTS ARE BASED ON THE ASSUMPTION THAT IF AN AREA IS LEASED, PRODUCTION OF OIL AND GAS MAY OCCUR. ENCLOSURE #1 OF THIS TESTIMONY DEPICTS OIL PRODUCING FACILITIES IN PLACE IN 1973 AND 1985 IN THE PRUDHOE BAY AND ADJACENT AREAS. AS CAN BE CLEARLY SEEN BY THE SIGNIFICANT INCREASE IN NUMBER OF FACILITIES BETWEEN 1973 AND 1985, OIL

PRODUCTION IS AN ONGOING ACTIVITY WITH FACILITIES BEING ADDED CONTINUALLY. FOR EXAMPLE, ARCO ALASKA, INC. RECENTLY SUBMITTED PRELIMINARY APPLICATIONS FOR ANOTHER SEVENTEEN DRILL PADS IN THE KUPARUK DEVELOPMENT AREA.

IN ORDER TO EFFECTIVELY MITIGATE POTENTIAL ADVERSE ENVIRONMENTAL EFFECTS OF OIL AND GAS ACTIVITIES, WE HAVE TAKEN THE FOLLOWING STEPS:

- (1) A SIGNIFICANT AMOUNT OF INFORMATION HAS BEEN GATHERED BY THE U.S. FISH AND WILDLIFE SERVICE (USFWS) AND THE ADF&G OVER THE PAST FIVE YEARS ON THE DISTRIBUTION AND ABUNDANCE OF FISH AND WILDLIFE RESOURCES IN THE ANWR. THESE DATA HAVE BEEN REVIEWED AND ANALYZED IN ORDER TO IDENTIFY HABITATS OF SPECIAL CONCERN TO SELECTED SPECIES OF FISH AND WILDLIFE;
- (2) DATA GAPS HAVE BEEN IDENTIFIED AND STUDIES RECOMMENDED TO FILL THESE DATA GAPS;
- (3) EXISTING OIL AND GAS ACTIVITIES ON THE NORTH SLOPE HAVE BEEN EXAMINED TO DETERMINE THE TYPE AND NUMBER OF FACILITIES REQUIRED FOR THE PRODUCTION OF OIL AND GAS IN COMMERCIAL QUANTITIES AND THE IMPACTS OF THESE FACILITIES ON FISH AND WILDLIFE HABITATS;
- (4) GENERAL MITIGATIVE MEASURES (FOR EXAMPLE, ENVIRONMENTALLY SOUND STANDARDS FOR FACILITY SITING) THAT WE HAVE FOUND NECESSARY TO ENSURE ADEQUATE PROTECTION OF KEY FISH AND WILDLIFE HABITATS HAVE BEEN RECOMMENDED TO THE DEPARTMENT OF THE INTERIOR (DOI); AND
- (5) RECOMMENDATIONS HAVE BEEN MADE TO THE DOI TO ENSURE THAT A PROPER LEGAL FRAMEWORK IS IN PLACE FOR A SOUND REGULATORY BASIS FOR THE IMPLEMENTION AND ENFORCEMENT OF REQUIRED MITIGATION.

IT ALSO WILL BE NECESSARY TO REFINE AND MODIFY MITIGATIVE MEASURES BASED ON FUTURE RESEARCH AND NEW INFORMATION.

FURTHERMORE, IF AREAS WITHIN ANWR ARE LEASED, SITE SPECIFIC MITIGATION WILL BE NEEDED FOR EACH EXPLORATION AND PRODUCTION PLAN. FIELD MONITORING AND COMPLIANCE ALSO WILL BE REQUIRED TO ENSURE, TO THE EXTENT PRACTICABLE, THAT MITIGATIVE MEASURES ARE WORKABLE AND THAT COMPLIANCE IS ACHIEVED DURING FIELD ACTIVITIES.

THE STATE OF ALASKA'S RECOMMENDED STRATEGY FOR MITIGATING ADVERSE IMPACTS OF OIL AND GAS EXPLORATION AND PRODUCTION IN THE 1002 AREA OF THE ANWR IS BASED ON A CLEAR AND DISTINCT SEPARATION OF THE EXPLORATION PHASE FOR OIL AND GAS AND THE PRODUCTION PHASE OF AN OIL OR GAS FIELD OF COMMERCIAL SIZE. OUR RECOMMENDATIONS FOLLOW:

- (1) WE HAVE REQUESTED THAT THE DOI PREPARE SEPARATE TERMS AND CONDITIONS FOR THE EXPLORATION AND PRODUCTION PHASES. WE BELIEVE THAT WITH SEASONAL CONSTRAINTS ON EXPLORATION ACTIVITIES (E.G., WINTER DRILLING WITH SOME ALL-SEASON ACTIVITY) MOST OF THE POTENTIAL ADVERSE EFFECTS OF OIL AND GAS EXPLORATION CAN BE MITIGATED EFFECTIVELY.

IN CONTRAST, IF OIL AND GAS ARE FOUND IN QUANTITIES SUFFICIENT FOR PRODUCTION, THE POTENTIAL FOR IMPACTS TO FISH AND WILDLIFE AND THEIR HABITATS ARE ORDERS OF MAGNITUDE GREATER. PRODUCTION OF OIL AND GAS WILL THEREFORE REQUIRE A SUBSTANTIAL NUMBER OF ADDITIONAL STEPS TO ENSURE ADEQUATE ENVIRONMENTAL PROTECTION.

- (2) OUR STRATEGY FOR ENSURING EFFECTIVE MITIGATION OF ADVERSE IMPACTS TO FISH AND WILDLIFE RESOURCES INVOLVES TWO BASIC CONCEPTS. FIRST, THE ESTABLISHMENT OF A JOINT STATE/FEDERAL PROGRAM COVERING THE FOLLOWING PHASES OF OIL AND GAS EXPLORATION AND PRODUCTION IS REQUIRED:
 - (a) PROJECT PLANNING INCLUDING NECESSARY FIELD STUDIES;
 - (b) A TECHNICAL ANALYSIS OF PROPOSED DESIGNS, PLANS, AND PROCEDURES (I.E., DESIGN REVIEW);
 - (c) PERMITTING;
 - (d) FIELD MONITORING; AND
 - (e) COMPLIANCE.

SECOND, DEVELOPMENT OF EFFECTIVE ENVIRONMENTAL MITIGATION FOR THE PRODUCTION PHASE OF OIL AND GAS DEVELOPMENT IS NEEDED.

IN ORDER TO WORK EFFECTIVELY WITH THE OIL AND GAS INDUSTRY, A JOINT STATE/FEDERAL INTERDISCIPLINARY TEAM WOULD OVERSEE AND PARTICIPATE IN PROJECT PLANNING, PROJECT DESIGN REVIEW, PERMIT ACTIONS, FIELD MONITORING, AND COMPLIANCE. IN ALL ASPECTS OF THIS PROCESS, IT IS ESSENTIAL THAT STATE AND FEDERAL REGULATORY AGENCIES MAINTAIN THEIR OVERSIGHT RESPONSIBILITY WHILE WORKING COOPERATIVELY AND CLOSELY WITH THOSE PARTIES RESPONSIBLE FOR OIL- AND GAS-RELATED ACTIVITIES. AS RESEARCH RESULTS BECOME AVAILABLE IN THE FUTURE, THIS GROUP WOULD INCORPORATE APPROPRIATE CONCLUSIONS IN PROJECT PLANNING AND APPROVALS. PROGRAMS FOR ENSURING PROTECTION OF FISH AND WILDLIFE RESOURCES AND HABITATS EXIST AND HAVE BEEN USED SUCCESSFULLY IN ALASKA FOR LARGE SCALE DEVELOPMENT PROJECTS SUCH AS THE TRANS-ALASKA PIPELINE SYSTEM AND THE PRECONSTRUCTION PHASE OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM.

DEVELOPMENT OF EFFECTIVE MITIGATION METHODS AND PROCEDURES IS A PROCESS THAT WILL CONTINUE AS LONG AS THERE IS OIL AND GAS ACTIVITY. A NUMBER OF GENERAL RECOMMENDATIONS ALREADY HAVE BEEN MADE BY THE STATE OF ALASKA BASED ON ADF&G'S MITIGATION POLICY AND EXPERIENCES WITH NORTH SLOPE OIL AND GAS EXPLORATION AND PRODUCTION IN SUCH AREAS AS THE NATIONAL PETROLEUM

RESERVE-ALASKA AND IN OIL PRODUCING FIELDS SUCH AS PRUDHOE BAY, MILNE POINT, ENDICOTT, KUPARUK, AND LISBURNE.

THE ADF&G HAS BEEN INVOLVED IN GATHERING BIOLOGICAL INFORMATION IN ANWR FOR THE LAST SIX YEARS. OUR GAME BIOLOGISTS HAVE WORKED COOPERATIVELY WITH THE USFWS SINCE 1981 ON BASELINE BIOLOGICAL STUDIES. PERSONNEL FROM THE DIVISION OF SUBSISTENCE HAVE CONDUCTED RESEARCH IN THE KAKTOVIK AND ARCTIC VILLAGE AREAS DOCUMENTING RESOURCE USE PATTERNS OF INDIVIDUALS LIVING IN THESE AREAS. THESE EFFORTS ON THE PART OF ADF&G PERSONNEL CONTINUE TODAY IN THE ANWR 1002 AREA, AND OUR HABITAT BIOLOGISTS HAVE BEEN INVOLVED WITH LARGE SCALE CONSTRUCTION PROJECTS THROUGHOUT ALASKA INCLUDING THE PRUDHOE AND KUPARUK OIL FIELD COMPLEXES. WE HAVE ANALYZED THE INFORMATION ON FISH AND WILDLIFE RESOURCES IN THE ANWR, IDENTIFIED SIGNIFICANT DATA GAPS, AND RECOMMENDED MITIGATIVE MEASURES IN LIGHT OF OUR EXPERIENCES WITH NORTH SLOPE OIL AND GAS PRODUCTION AND OTHER OIL-RELATED DEVELOPMENTS WITHIN THE STATE.

IN THE SPRING OF 1986, THE ADF&G EVALUATED THE AVAILABLE RESOURCE INFORMATION FOR THE 1002 AREA AND IDENTIFIED HABITATS OF SPECIAL CONCERN. SPECIFIC EMPHASIS WAS PLACED ON KEY SPECIES IN THE 1002 AREA SUCH AS CARIBOU, MUSKOXEN, ARCTIC CHAR, SNOW GESE, AND POLAR BEARS. BASED ON THIS EVALUATION, RECOMMENDATIONS WERE MADE TO THE DOI FOR THE MITIGATION OF POTENTIAL ADVERSE IMPACTS TO FISH AND WILDLIFE RESOURCES, THEIR HABITATS, AND USES OF THESE RESOURCES FOR SUBSISTENCE PURPOSES. NOTABLE AREAS OF CONCERN INCLUDED THE FOLLOWING:

- (1) THE "CORE CALVING AREA" OF THE PORCUPINE CARIBOU HERD;
- (2) A THREE MILE BUFFER ZONE ALONG THE COAST USED BY VARIOUS SPECIES OF WATERFOWL, CARIBOU, AND POLAR BEARS;
- (3) FRESH WATER SPRING AREAS SUPPORTING OVERWINTERING FISH;
- (4) THE NEARSHORE MARINE ENVIRONMENT USED BY ANADROMOUS FISH AND WATERFOWL DURING THE SUMMER MONTHS; AND
- (5) RIPARIAN HABITATS ALONG MAJOR STREAM SYSTEMS.

MITIGATIVE MEASURES FOR THESE HABITATS WERE RECOMMENDED TO ENSURE THE PROPER PROTECTION OF THE VARIOUS FISH AND WILDLIFE SPECIES THAT USE THESE HABITAT TYPES. UTILIZING THIS INFORMATION, WE RECOMMENDED GENERAL APPROACHES TO EFFECTIVE MITIGATION, AS WE DEEMED IT PREMATURE TO PROVIDE RECOMMENDATIONS ON A SITE-SPECIFIC BASIS. IN RECOMMENDING THESE MITIGATIVE MEASURES, WE GAVE DUE CONSIDERATION TO THE FACT THAT CERTAIN ACTIVITIES AND FACILITIES ASSOCIATED WITH PRODUCTION WOULD BE NEEDED IN SOME OF THESE IMPORTANT HABITATS. IN THESE PARTICULAR CASES, THE RECOMMENDATIONS MADE WERE BALANCED WITH KNOWN REQUIREMENTS OF OIL AND GAS EXPLORATION AND PRODUCTION. ALTHOUGH THESE MEASURES WOULD MITIGATE MANY OF THE EFFECTS OF EXPLORATION AND DEVELOPMENT, IT SHOULD BE NOTED THAT SOME EFFECTS CANNOT BE FULLY MITIGATED.

TO ILLUSTRATE HOW THE PROCESS MIGHT WORK IN THE 1002 AREA OF THE ANWR, WE WILL DISCUSS A HABITAT OF SPECIAL CONCERN - STREAM SYSTEMS AND ASSOCIATED RIPARIAN HABITATS - COUPLED WITH AN EXPLORATION AND PRODUCTION ISSUE - INDUSTRIAL REQUIREMENTS FOR TREMENDOUS QUANTITIES OF GRAVEL AND WATER. THIS IS BUT ONE OF THE ENVIRONMENTAL ISSUES THAT WILL HAVE TO BE ADDRESSED IF PORTIONS OF THE 1002 AREA OF ANWR ARE LEASED - EXAMPLES OF SOME OTHER ISSUES ARE DISCUSSED BRIEFLY IN ENCLOSURE II.

BASED ON RESOURCE INFORMATION CURRENTLY AVAILABLE FOR THE 1002 AREA, THE ADF&G DETERMINED THAT STREAM SYSTEMS AND

THEIR ASSOCIATED RIPARIAN HABITATS WERE OF MAJOR IMPORTANCE TO MANY FISH AND WILDLIFE SPECIES. MOOSE ON THE NORTH SLOPE OCCUR ALMOST EXCLUSIVELY IN RIPARIAN HABITATS, POLAR BEAR DENS FREQUENTLY ARE LOCATED IN AREAS OF DRIFTED SNOW SUCH AS CUTBANKS ALONG LOWER PORTIONS OF THE RIVERS, MAJOR NORTH/SOUTH MOVEMENT CORRIDORS FOR CARIBOU AND MUSKOXEN OCCUR ALONG RIPARIAN HABITATS, SHOREBIRD AND PASSERINE DENSITIES AND DIVERSITIES ARE HIGHEST IN STREAM SYSTEMS AND ASSOCIATED RIPARIAN HABITATS, AND FISHERIES RESOURCES (E.G., ARCTIC CHAR, ARCTIC GRAYLING, WHITEFISH) ARE DEPENDENT ON THESE SYSTEMS. BASED ON THESE RESOURCE VALUES WE RECOMMENDED THAT THESE AREAS BE AFFORDED THE NECESSARY DEGREE OF PROTECTION AND THAT ALL OIL AND GAS FACILITIES WHICH CAN BE MOVED BE PLACED OUTSIDE OF A 3/4 MILE BUFFER ADJACENT TO THE MAJOR RIVER SYSTEMS.

CONSTRUCTION OF FACILITIES WITHIN ANWR OR BETWEEN ANWR AND THE TRANS-ALASKA PIPELINE SYSTEM WOULD OCCUR OVER PERMAFROST SOILS. CURRENT CONSTRUCTION TECHNIQUES REQUIRE THAT ALL STRUCTURES BE PLACED ON GRAVEL PADS WITH A NOMINAL THICKNESS OF FIVE FEET TO PROVIDE ADEQUATE INSULATION, THEREBY PREVENTING THAW DEGRADATION OF UNSTABLE SOILS. ROADS CONNECTING ALL MAJOR OIL AND GAS FACILITIES AND CAUSEWAYS IN THE NEARSHORE ENVIRONMENT ALSO REQUIRE SIGNIFICANT VOLUMES OF MINERAL MATERIAL. WATER REQUIREMENTS ASSOCIATED WITH ICE ROAD AND PAD CONSTRUCTION, HYDROTESTING OF PIPELINES, DRILLING, SAFETY, AND DOMESTIC WATER REQUIREMENTS ARE SIGNIFICANT, AND GREATLY EXCEED THE AMOUNT OF FREE WATER AVAILABLE IN THE ANWR 1002 AREA DURING THE WINTER MONTHS. THE VOLUME OF WATER IN RIVER SYSTEMS PEAKS DURING SPRING RUNOFF AND AFTER SUMMER STORMS BUT DIMINISHES TO ZERO DURING THE LONG WINTER MONTHS WITH THE EXCEPTION OF SPRING AREAS FED BY GROUNDWATER. ISOLATED DEEP POOLS MAY OCCUR WITHIN SOME OF THE MAJOR RIVER SYSTEMS SUCH AS THE CANNING RIVER. INADEQUATE WATER RESERVES EXIST WITHIN ANWR TO SUPPORT LARGE SCALE EXPLORATION OR PRODUCTION ACTIVITIES.

AT THE PRESENT TIME IN THE OILFIELD AROUND PRUDHOE BAY, GRAVEL IS OBTAINED FROM LARGE MINE SITES (SURFACE AREA OF 40 TO 100 ACRES WITH A MINING DEPTH OF 35 TO 70 FEET) LOCATED BOTH WITHIN AND ADJACENT TO STREAM SYSTEMS. DURING THE LAST SEVEN YEARS, GRAVEL REMOVAL DIRECTLY FROM ACTIVE FLOODPLAIN AREAS HAS BEEN DISCOURAGED BY RESOURCE AGENCIES DUE TO A LACK OF FIELD SURVEILLANCE AND COMPLIANCE AND THE NEED TO ESTABLISH WATER RESERVOIRS. NEW GRAVEL SITES HAVE BEEN LOCATED IN WETLAND AREAS ADJACENT TO STREAM SYSTEMS. FOLLOWING COMPLETION OF MINING AT SPECIFIC GRAVEL SITES, THE MINED-OUT SITES HAVE BEEN FLOODED WITH WATER DURING THE BREAKUP PERIOD AND HAVE BEEN CONVERTED INTO WATER RESERVOIRS. RECENT WORK BY THE ADF&G AT SEVERAL OF THESE INUNDATED GRAVEL SITES INDICATES THAT WITH PROPER SITE RESTORATION AND CONTROL OF WATER USE, SOME NET BENEFIT TO SELECTED FISH AND WILDLIFE SPECIES MAY BE ATTAINABLE. TO DATE, HOWEVER, NO MATERIAL SITES IN THE PRUDHOE BAY AREA HAVE BEEN RESTORED IN SUCH A MANNER THAT THEY PROVIDE SUITABLE HABITAT FOR FISH AND WILDLIFE.

THE STATE OF ALASKA RECOGNIZED, AS DID DOI, THAT PIPELINES AND ROADS WOULD HAVE TO CROSS THESE MAJOR STREAMS AND RIPARIAN HABITATS. PERFORMANCE STANDARDS ON CROSS DRAINAGE WERE DEVELOPED AND PROVIDED TO THE DOI. THESE PERFORMANCE STANDARDS WERE BASED ON EXPERIENCE GAINED DURING THE PAST DECADE OF WORK WITH OIL AND GAS ON THE NORTH SLOPE. THEREFORE, WE RECOMMENDED THAT A COMPREHENSIVE PROGRAM BE INITIATED TO FULLY ASSESS GRAVEL AND WATER AVAILABILITY IN THE ANWR 1002 AREA, INCLUDING AVAILABILITY OF GRAVEL IN FLOODPLAIN AND RIPARIAN HABITATS. DECISIONS ON LOCATIONS OF GRAVEL SITES SHOULD NOT BE MADE WITHOUT AN ADEQUATE DATA BASE ON THE GRAVEL RESOURCES AVAILABLE IN THE VARIOUS HABITAT TYPES, THE MATERIAL REQUIREMENTS FOR EACH EXPLORATION OR PRODUCTION SCENARIO, AND THE IMPACTS OF THE VARIOUS MINE SITE ALTERNATIVES ON FISH AND WILDLIFE HABITAT.

IN THE ANWR AREA, HOWEVER, IT APPEARS THAT THE BEST LOCATION FOR AT LEAST SOME GRAVEL SITES MAY INDEED BE IN RIVER SYSTEMS. THIS SHIFT IN APPROACH IS BASED ON INFORMATION COLLECTED BY THE ADF&G ON THE NORTH SLOPE THAT INDICATES THAT SOME OF THE GRAVEL SITES THAT HAVE BEEN CONVERTED TO WATER RESERVOIRS MAY ALSO PROVIDE USABLE HABITAT FOR FISH AND OTHER WILDLIFE SPECIES. HOWEVER, TO DEVELOP GRAVEL SITES IN FLOODPLAIN ENVIRONMENTS AND CONVERT THEM TO USABLE WATER RESERVOIRS WHILE STILL PROVIDING SOME LONG TERM BENEFIT TO FISH AND WILDLIFE, WILL REQUIRE A FULL COMMITMENT ON THE PART OF INDUSTRY AND REGULATORY AGENCIES TO RESOLVE THIS ISSUE. ADVANCE PLANNING, APPROPRIATE DATA COLLECTION, AND ASSESSMENT OF THE OPTIMAL GRAVEL SITES IN TERMS OF SITE LOCATION, MINING PLANS, OPERATIONS, AND REHABILITATION WILL BE REQUIRED.

THEREFORE, WE RECOMMENDED TO THE DOI THAT ALTERNATIVE SOURCES OF WATER BE CONSIDERED, AND THAT GRAVEL SITES BE SITED, DEVELOPED, AND RESTORED IN A MANNER SUCH THAT OVERALL IMPACTS TO WATER QUALITY AND FISH AND WILDLIFE RESOURCES ARE MITIGATED. A POSSIBLE APPROACH TO SUCH A RESOLUTION FOLLOWS.

A JOINT STATE/FEDERAL INTERDISCIPLINARY TEAM WORKING WITH INDUSTRY SHOULD IDENTIFY ALTERNATIVE APPROACHES FOR THE ACQUISITION OF LARGE QUANTITIES OF WATER AND GRAVEL, INCLUDING NEEDED FIELD STUDIES. SUBSURFACE GEOTECHNICAL STUDIES TO IDENTIFY GRAVEL RESOURCES (QUANTITIES, QUALITY, AND LOCATION) IN VARIOUS HABITAT TYPES SHOULD BE REQUIRED PRIOR TO SUBMITTAL OF INDIVIDUAL PERMIT APPLICATIONS. WORK SHOULD BE INITIATED TO DEVELOP DESIGN CRITERIA AND STANDARDS FOR THE DEVELOPMENT OF MINING PLANS INCLUDING RESTORATION OF GRAVEL SITES CONCURRENT WITH MINING OPERATIONS. MINING PLANS SHOULD BE PREPARED TO INCLUDE CONSIDERATION FOR FISH AND WILDLIFE USE FOLLOWING COMPLETION OF MINING. ALL AREAS, INCLUDING STREAM AND ASSOCIATED RIPARIAN SYSTEMS SHOULD BE CONSIDERED WITH THE OBJECTIVE OF PROVIDING GRAVEL, SUBSEQUENT WATER SITES FOR SUPPORT OF INDUSTRIAL ACTIVITIES, AND FISH AND WILDLIFE HABITAT. ASSUMING THESE ACTIONS ARE TAKEN, WE BELIEVE THAT THE ISSUE OF GRAVEL AND WATER AVAILABILITY AND MITIGATION OF EFFECTS TO FISH AND WILDLIFE RESOURCES CAN BE RESOLVED WITHOUT SIGNIFICANT ADVERSE EFFECTS TO FISH AND WILDLIFE IN THE 1002 AREA OF ANWR. WE ALSO BELIEVE THAT THE POTENTIAL EXISTS FOR PROVIDING HABITAT TO SELECTED SPECIES AS WAS DEMONSTRATED IN THE FIVE YEAR GRAVEL STUDY CONDUCTED BY A CONSULTING FIRM FOR THE USFWS.

WE HAVE FOCUSED ON AN OVERALL APPROACH TO MITIGATION OF ADVERSE IMPACTS TO FISH AND WILDLIFE RESOURCES USING WATER AND GRAVEL TO ILLUSTRATE AN EXAMPLE IN WHICH IMPACTS OF OIL AND GAS PRODUCTION COULD BE MITIGATED IF THE PROPER PROCEDURES WERE FOLLOWED. WE KNOW THAT THERE WILL BE TREMENDOUS DEMANDS FOR WATER AND GRAVEL IF EXPLORATION AND PRODUCTION OCCUR, AND WE KNOW THAT GRAVEL AND WATER SOURCES WILL HAVE TO BE DEVELOPED. WE KNOW THAT WATER IS NOT READILY AVAILABLE IN ANWR. WE ALSO KNOW THAT STREAMS AND ASSOCIATED RIPARIAN HABITATS MUST BE AFFORDED A HIGH DEGREE OF PROTECTION. USING THESE KNOWN FACTORS AS WELL AS OUR EXPERIENCES WITH OIL AND GAS DEVELOPMENT ELSEWHERE ON THE NORTH SLOPE, WE HAVE RECOMMENDED A WORKABLE APPROACH TO RESOLUTION OF THIS PROBLEM WHILE AT THE SAME TIME ENSURING AN ACCEPTABLE LEVEL OF PROTECTION FOR FISH AND WILDLIFE RESOURCES.

UNLIKE THE GRAVEL AND WATER EXAMPLE, WE DO NOT CURRENTLY BELIEVE THAT SUFFICIENT INFORMATION NOR EFFECTIVE MITIGATIVE MEASURES EXIST TO PREVENT ADVERSE IMPACTS TO THE PORCUPINE CARIBOU HERD WITHIN THE CORE CALVING AREA. AT THIS TIME, MR. KEN WHITTEN (ADF&G) WILL DISCUSS THE PORCUPINE CARIBOU HERD WITH EMPHASIS ON CARIBOU CALVING IN THE 1002 AREA.

TESTIMONY OF
WILLIAM D. VAN DYKE
BEFORE THE
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES
October 13, 1987

Mr. Chairman, and members of the Committee:

My name is William D. Van Dyke. I am a petroleum engineer with nine years of experience in Alaska. I serve as Petroleum Manager for the Division of Oil and Gas in the Department of Natural Resources. I am actively involved in the permitting of oil and gas activities on State lands, unitization of State oil and gas leases, and design of the terms and conditions attached to State oil and gas leases at the time of sale. I also have been very involved in developing the State position concerning proposed leasing of the coastal plain of the Arctic National Wildlife Refuge (ANWR).

Before discussing the details of possible ANWR development strategies and specific mitigation measures, I would like to stress four very important points. First, oil and gas leasing in Alaska is extremely important to both the State and the nation. Second, from the information I have seen, I am convinced that the coastal plain of ANWR is the most prospective unexplored petroleum province remaining in North America. Third, given what we have learned from our years of experience at Prudhoe Bay and along the TAPS line, I believe that oil and gas development can take place in ANWR with a minimal degree of impact to the environment. And fourth, an exploration-only policy should not be considered for ANWR.

The manner in which State North Slope oil and gas lessees conduct their business has certainly evolved since what might be termed the "early years" at Prudhoe Bay. Government agencies' understanding of North Slope oil field operations and of the arctic environment have likewise matured. Summertime cat trains over the tundra and long gravel airstrips at each and every exploratory well site are now only stories of the past. Large balloon-tired vehicles, ice roads and comprehensive planning reflect the technologies and tools of today.

We do not know everything that there is to know about the environment and the ecology of the coastal plain. Year by year our understanding of these matters is growing, and we are developing better and more effective mitigation techniques. Certainly that trend will continue in the future. We have seen a progression from the first development at Prudhoe Bay and TAPS construction in the 1970's to the more recent developments at the Kuparuk, Milne Point, Lisburne and Endicott fields. The improvements reflect the incremental knowledge and experience gained. What has been learned at these fields can be applied to future activities on the coastal plain.

Let me cite a few examples of the advances that have been made:

1. Typically, on the North Slope, numerous development wells are drilled from a single gravel pad. At Prudhoe Bay, the original development wells were about 120 feet apart from each other. At the Kuparuk Field and at Lisburne the wells are about 60 feet apart. At the new offshore Endicott field, those wells are only 10 feet apart, but this requires a specially modified drill rig. Overall, this closer well spacing means that drill sites can be much smaller for a

given number of wells; overall utilization of gravel is reduced and fewer square feet of tundra are covered.

2. Significant advances have also been made in 3-D seismic interpretation, directional drilling technology, and Measurement While Drilling (MWD) technology. Again, fewer drill sites may be needed, and the sites can be optimally located. Having some flexibility in being able to move the drill site allows sensitive habitats to be avoided, while at the same time the subsurface reservoirs can be properly developed and produced.

3. Development and operation of giant oil fields requires wide-ranging support activities. Drilling mud and cement companies, construction contractors, well service operators, and the like, are all a necessary part of the day-to-day operation. As with the actual in-field operations, we are now much more experienced in planning for the needs of the service companies. The Kuparuk River Oil Field, with its associated Kuparuk Industrial Center, is a contemporary example of how to plan and permit these types of activities. We made some early mistakes at Prudhoe Bay, but we learned from those mistakes.

Certainly development of oil and gas on the coastal plain will require some trade-offs. However, relative to what might have been required even just 10 years ago, the magnitude of those trade-offs has been significantly diminished and in some cases even eliminated. Through a combination of innovative thinking, close observation of the actual effects caused by development, and pure scientific study, we are in a position today to say oil exploration and development can proceed in ANWR without significant adverse impact.

I believe an exploration-only policy in ANWR would be a big mistake for this country.

An exploration-only policy would cost the Federal government a lot of money. These costs would take several forms. The operation of an exploratory program would result in sizeable out-of-pocket government expenditures. Secondly, the government would forego lease and bonus revenues. And thirdly, such a program could effectively condemn adjacent acreage, and the attendant revenues that could flow from that property.

The National Petroleum Reserve (NPRA) is a prime example of a government-sponsored exploration program and the problems inherent in such a program. Between 1923 and 1953 the United States Navy drilled 37 test wells and found three oil accumulations and six gas accumulations within the NPRA. Only two of these discoveries were considered sizeable. This 30-year exploration effort cost the Federal government between \$50 and \$60 million.

In 1974, exploration began again in the NPRA, this time under the direction of the U.S. Geological Survey. Between 1974 and 1981 twenty-seven exploratory wells were drilled within the NPRA at a cost to the Federal government just over a half billion dollars. After the Federal exploration program ended, Congress authorized competitive leasing in NPRA, and three sales were held. The first two of these sales received minimal interest, and the third received no bids.

If the NPRA had been leased under a traditional competitive leasing program not only would it likely have generated millions of dollars of bonus revenues, but the exploration costs would have been borne by the oil industry.

Additionally, an exploration-only policy raises a number of technical issues. One issue is how many wells are necessary to confirm (or condemn) the region's resource potential. In the ANWR coastal plain, where the subsurface geology is extremely complex, it will require a very large number of exploratory wells (each at a high cost) to evaluate all the geologic plays which have the potential to yield commercial deposits. The drilling of six to 12 unsuccessful exploratory wells will not establish, with a high degree of confidence, that no commercial oil deposits exist in the 1002 area. The problem, as I see it, is that exploratory wells reveal more about the subsurface geology and oftentimes indicate additional plays and stratigraphic intervals that warrant evaluation. More questions are created than are answered. With a limited exploratory well program, the possibility exists that the area will be falsely condemned without the complete and thorough evaluation a more traditional leasing and exploration program would provide.

A traditional competitive leasing program results in many companies participating in the evaluation of different plays. One entity (the USGS, the State, or an individual company) cannot generate as many different interpretations from these data (or novel ideas for potential deposits) as a group of companies. Thus, the exploration-only proposal limits not only the number, but the types of plays that will be evaluated, further increasing the possibility that deposits could be missed.

In the case of a well (or wells) that is successful, various land management decisions and conflicts will arise related to the dispensation of the unleased lands. In most cases it requires a number of delineation wells to determine the size of a discovery--who will incur the cost of the delineation wells? How will leasing of partially known deposits be managed? These are problems that are not present with a competitive leasing regime.

With respect to the design of mitigation measures, both our leasing and permitting systems use a formal tri-agency review procedure to assure that lease sale proposals and permit applications receive a broad and a thorough review. The Alaska Department of Fish and Game (ADF&G), the Alaska Department of Environmental Conservation (ADEC), and the Alaska Department of Natural Resources (ADNR) each provide comments on the proposal. No single State agency has veto power, and conflicts between agencies are elevated--when necessary--to agency directors or commissioners for final resolution. We also solicit input from the Federal resource agencies, the oil industry and the people living in the sale area.

Given the scope and complexity of oil field operations and the broad range of environmental concerns at hand, I cannot imagine any one State or Federal agency possessing the expertise that is needed to properly review and approve all the terms of sale that might be used for the leasing of the coastal plain or for approval of a proposal to develop a major new oil field in the coastal plain.

In my view, joint State-Federal multiagency review is a necessity at both the lease sale planning stage and during the actual permitting process. The State has also recommended joint State-Federal monitoring and enforcement teams be created. This will be essential in ANWR where Federal, State and fee ownership of subsurface mineral rights is a certainty, and permitting jurisdictions overlap.

Our terms of sale are a mixture of general performance standards and very site-specific requirements. We have taken this approach for a number of reasons. First, it is impractical to go out into the field ahead of time and gather the enormous amount of site-specific baseline data

that would be needed to write detailed all-encompassing stipulations for each and every square foot of proposed lease sale area. Second, in our lease sale areas, we are not absolutely certain where the oil and gas is located and what volumes might be there. We therefore cannot anticipate ahead of time the exact location or optimum layout of roads, pipelines, well sites, etc. Because of these two factors it is best to let the potential lessees know at the time of sale the parameters within which they will be expected to operate, while we retain the flexibility later in the process to fine-tune the proposals as they are developed.

In those areas where we have more detailed information (such as along the major North Slope river systems) or for those concerns that are well recognized (such as seasonal protection of caribou calving areas), we do draft very detailed site-specific measures. If you have the studies and the data in hand, it is only fair to let the lessees know that very specific restrictions will apply in certain areas or during certain times of the year.

But in those instances where the data are sketchy or nonconclusive or if there is a choice of possible mitigation measures, I believe it is a mistake at the lease sale stage to lock in rigid stipulations that later may turn out to be ineffective or unnecessary.

Recent exploration on the Federal OCS in Alaska and on State lands has been very disappointing. Our aggregate North Slope oil reserves are about half gone, and Cook Inlet production is well past its zenith. In reality, very few giant oil fields are ever discovered, but the ones that are found account for about two-thirds of all the oil produced. Because of the development at the Prudhoe Bay, Kuparuk, Milne Point, Lisburne, and Endicott fields, we have safe, proven technology. In terms of being able to plan and design for protection of biological resources, we are over the major hurdles that a major development proposal might present.

Prudhoe Bay currently provides over 20% of this Nation's domestic production. As that area moves into decline, ANWR represents this country's best opportunity to supplement those reserves. With the 10-15 year lead time necessary for exploration and development in the Arctic, this is the ideal time to begin a competitive ANWR leasing program. The State of Alaska stands ready and willing to work with the committee as it considers this important legislation.

We will be happy to provide the specific information you need on our current North Slope leasing and permitting practices, and our ideas on specific mitigation measures for ANWR.

For the record, along with my written testimony, I have submitted copies of three of our recent State notices of sale which list sale terms and conditions representative of those used to lease State acreage adjacent to ANWR. Sale 51 was an onshore sale. Sale 50 was an offshore sale. Sale 54 is an onshore sale proposed for January 1988. The notices for sales 50 and 51 contain the complete set of sale terms and conditions the State applied. The notice for Sale 54 is still in the preliminary stage, but you can see where we are headed in terms of mitigating measures for that area. There is no need to go through those notices page by page. Rather, I believe it is important for you to understand how we arrived at the final product, and the rationale behind those sale terms.

We are submitting the first stage of a lease sale stipulation review and analysis study that the State has undertaken. The study is being done to reassess the costs

and the benefits of each stipulation given the advances that have been made over the past few years.

Additionally, a summary of the different leasing methods the State currently has the authority to use is included.

Thank you for the opportunity to testify today and I will be happy to answer any questions.

INITIAL AGENCY RESPONSES FOR ONGOING REVIEW OF OIL AND GAS

LEASING STIPULATIONS AND MITIGATING MEASURES

(Compiled October 6, 1987)

MEMORANDUM

State of Alaska

P.O. Box 0

Juneau, Alaska 99811

TO: Elizabeth Benson
Division of Governmental
Coordination - Fairbanks
Office of Management and Budget

DATE: August 7, 1987

FILE NO:

TELEPHONE NO: 465-2653

FROM: Doug Redburn, Chief *DR*
Water Quality Management
Division of Environmental Quality

SUBJECT: AOGA Stipulation
Study Agency Response

By: Michael E. Wheeler, Coordinator *M.E.W.*
Oil and Gas Development Program

In accordance with the agency assignments for addressing the AOGA Oil and Gas Lease Sale Stipulation Study, the Department of Environmental Conservation has prepared comments on the three mitigating measures which fall under the regulatory purview and statutory authority of this department. These comments (Attachment 1) are presented in the format specified in your June 19, 1987 memorandum. If you have any questions on this material, please contact Michael E. Wheeler (563-6529) at our Anchorage office.

MEW:by

cc w/attach: Larry Dietrick, NRO
Al Ott, DFG, Fairbanks
Jerry Brossia, DNR, Fairbanks
Kurt Fredriksson, DGC, Juneau

Bill Van Dyke, DNR, Anchorage
Lance Trasky, DFG, Anchorage

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AUG 26 1987

DIVISION OF OIL & GAS
ANCHORAGE, ALASKA

Attachment 1. DEC-Assigned Stipulations Response

1. Stipulation 2. Prohibition on the dumping of drilling muds and cuttings.

- a. Type of Stipulation: Actually a term of sale, the prohibition of offshore disposal of drilling muds and cuttings applies only under certain conditions. These include: restrictions in shallow water areas of low mixing energy (e.g. within the 2 m isobath); restrictions in areas of high biological sensitivity (e.g. river mouths, clam beds); and when the discharged drilling muds and cuttings are oil based or oil-contaminated as defined by an elutriate oil and grease concentration greater than 50 mg/l.
- b. Purpose of Term of Sale: This term is designed to ensure compliance with the regulations of the Department of Environmental Conservation. Specifically, the discharge of drilling muds and cuttings is regulated by water quality criteria (18 AAC70. 020), which would preclude the offshore discharge of oil-contaminated wastes into State waters when such discharges will "cause a film, sheen or discoloration on the surface or floor of the water body." The discharge of non-contaminated muds and cuttings in the offshore marine environment in State waters is generally acceptable where it is demonstrated that such discharges will not likely cause deleterious effects to aquatic life or result in the accumulation of solids along the shoreline or in the nearshore environment (18 AAC 70. 020).

The term of sale dealing with drilling muds disposal is designed to meet regulatory requirements and clearly state how those requirements would be applied. In this sense, the term of sale provides advance notice to industry of operating conditions that may be expected for potential lease sale tracts. Furthermore, the term is not discretionary, and equivalent conditions are specified within NPDES discharge permits.

- c. Effectiveness: The effectiveness of this term as an additional tool is that it provides prospective bidders information on what permit restrictions and operating conditions would apply to specific tracts within a proposed sale area. This advanced notice is to industry's benefit in planning operations costs and figuring such costs into the bidding process.

Its effectiveness in protecting water quality has been demonstrated through field monitoring of marine disposal areas for heavy metals and petroleum hydrocarbons, and monitoring hydrocarbon tissue burdens in key species. Study results have indicated only localized degradation of water quality and sediment quality, and no reported accumulation of hydrocarbons in marine species.

2. Stipulation 6. Discharge of Produced Water.

- a. **Type of Stipulation:** This condition is also a term of sale to be applied to ensure compliance with DNR plan of operation approvals. Like the drilling wastes term, this term is area- and depth-specific and is applied to ensure compliance with state water quality standards. Typically, in seasonally ice-covered nearshore areas of the arctic (Beaufort Sea, Chukchi Sea and Norton Sound), discharge of produced waters is prohibited only within the 10 m isobath (depth contour). This prohibition is uniformly applied in both state and federal lease requirements applicable to these areas. No prohibition applies outside the 10 meter depth contour. It has been demonstrated in several national studies that mixing and dilution is insufficient seasonally or annually in such shallow areas to mitigate the adverse environmental effects of this type of continuous discharge of wastes containing low levels of aromatic hydrocarbons, and which are high in salinity and low in oxygen or anoxic. In areas of greater depth and tidal mixing, conditions are not as stringent (e.g. Cook Inlet) since dispersion is enhanced. In onshore situations and in some offshore development projects, it is common practice to reinject produced waters into shallow formations or to commingle them with fluid streams used for water flooding.
- b. **Purpose of the Term of Sale:** The purpose of this term is to minimize deleterious effects, minimize violations of water quality, and provide a clear statement of the manner in which state regulatory requirements for water quality standards would be applied to this specific category of wastewater. Statutory authority rest in AS 46.03.010, AS 46.03.020, AS 46.03.070, AS 46.03.080, AS 46.03.100 and AS 46.03.110; while regulatory authority may be found in the state water quality criteria (18 AAC 70.020) dealing with the water quality parameter of petroleum hydrocarbons and the marine water use of growth and propagation of fish, shellfish, aquatic life and wildlife.
- c. **Effectiveness:** This term prevents the adverse impacts of low levels of water-soluble oil components which have been shown by several studies to have deleterious effects on benthic organisms chronically exposed over long periods of time. Reduced numbers of benthic individuals and species have been demonstrated a considerable distance (greater than 300 meters) from the discharge point of produced waters. This reduction of benthic individuals and species is highly correlated with increases in sediment hydrocarbon concentrations. The movement of polluted sediments out of the originally affected area represents an additional concern. The term of sale also address this concern as well by serving to to minimize the area of potential impact.

Additionally, this term provides prospective bidders information on what permit restrictions and operating conditions would apply to specific tracts within a proposed sale area. This advanced notice is to industry's benefit in planning operations costs and figuring such costs into the bidding process.

3. Stipulation 12. State Discharge Monitoring Requirements that Exceed NPDES General Permit Regulations

- a. Type of Stipulation: The AOGA comments on this requirement refer to a permit condition which is included in general and individual NPDES permits which requires that drilling muds and cuttings discharged into State waters meet a 50 mg/l test criterion for elutriate oil and grease contamination. Muds and cuttings which fail this test are considered oil-contaminated. The test requirement is not a state oil and gas lease stipulation and it is not a proposed term of sale for the plan of operations. Thus, review of this requirement is not within the framework of the state oil and gas leasing process.
- b. Purpose of this Requirement: This permit requirement provides the state with an objective, quantitative measure of the oil and grease concentration of used drilling muds and cuttings. This information is necessary in order to ensure compliance with water quality standards dealing with petroleum hydrocarbons, oils and grease. The statutory authorities and regulatory references are the same as cited for the previous term.
- c. Effectiveness: This monitoring requirement is currently under review in the Cook Inlet for comparison to EPA's visible sheen test. Results of a comparative study will be used to analyze effectiveness and cost considerations.

MEMORANDUM
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL AND GAS

State of Alaska

TO: Elizabeth Benson
DGC/OMB

DATE: September 3, 1987

FILE NO:

TELEPHONE NO: 561-2020

FROM: Bill Van Dyke *Bill*
Petroleum Engineer

SUBJECT: AOGA Stipulation
Study

Attached are our comments for the lease stipulations which were assigned to the department for review under the AOGA stipulation study. If you have any questions concerning these comments, please contact me at 762-2550, Dave Johnston at 762-2592, or Kristina O'Connor at 762-2548 (PROFS account NROCKOC).

cc w/attach: Kurt Fredriksson - DGC
Jerry Brossia - DNR
Al Ott - DFG
Lance Trasky - DFG

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1. Requirement for archeological and historical surveys prior to construction and drilling operations.

a. Type of stipulation: The requirement for archeological and historical surveys prior to construction and drilling operations is a term of sale. The term requires lessees to perform an inventory of archeological and historical sites within the area of the proposed activity before the activity occurs. The inventory requires site surveys, consideration of local history (written and oral sources) and consultation with the Alaska Heritage Resources Survey and the National Register of Historic Places.

This term of sale should be viewed in association with a separate lease stipulation which addresses the discovery of historic or archeologic objects. That stipulation insures protection to any structure or object of historic or archeologic significance that is discovered during operations on the leased area. The stipulation requires the lessee to report such findings to the Department, and to make every reasonable effort to preserve and protect such site, structure, or object from damage.

b. Purpose: The purpose of the term of sale and the stipulation is to ensure compliance with the Alaska Historic Preservation Act (AS 41.35). Under the Act, the state establishes its policy to preserve and protect the historic, prehistoric and archeological resources of the state from loss, desecration and destruction so that the scientific, historic and cultural heritage embodied in those resources may pass undiminished to future generations. Further, the Act makes it unlawful to appropriate, excavate, remove, injure or destroy any historic, prehistoric or archeological resources of the state.

c. Effectiveness: The term of sale and stipulation are adopted for all state oil and gas lease sales, both onshore and offshore, to protect archeological and historical resources. Onshore, the term and stipulation provide effective protection for those resources. Generally, the level of investigation is related directly to the likelihood of discovery. Offshore, the term and stipulation appear to be ineffective and somewhat impractical because of the difficulty of conducting investigations in that environment (especially in Cook Inlet and the Beaufort Sea). For this reason, the requirement to conduct an inventory in offshore areas is usually waved at the plan of operation stage, depending on the likelihood of a possible discovery.

The department believes that requiring lessees to conduct archeological inventory is appropriate and constitutes wise land use management. The best means, and certainly the most economical way, to mitigate possible disturbance of archeological sites is to avoid the site in the first place. This can be accomplished most readily by requiring lessees to perform an archeological inventory prior to exploration and construction activities.

2. Requirement for environmental training of all personnel involved in drilling program.

a. Type of stipulation: The requirement for environmental and cultural training for drilling personnel is a term of sale. Under the term, lessees must develop an environmental training program for all personnel involved in exploration or development activities (including personnel of the lessee's contractors and subcontractors). The program must be designed to inform employees working on the project about specific types of environmental, social, and cultural concerns which relate to each employee's job. The program must be formulated and implemented by qualified instructors experienced in each pertinent field of study and must employ effective methods to ensure that personnel understand and use techniques necessary to preserve archeological, geological, and biological resources. The program must also be designed to increase the sensitivity and understanding of personnel to community values, customs, and lifestyles in areas in which such personnel will be operating.

b. Purpose: The purpose of the term is to enhance the sensitivity of oil field workers to the unique environment and social structure which exists within Alaska. Although no specific statutory authority exists to require environmental and cultural training, the department believes it is appropriate since, at least in the past, many oil field workers were new arrivals in the state. The department believes that the program reduces social tension and creates more respect and understanding for Alaska's unique environment and its indigenous people.

c. Effectiveness: The determination of the term's effectiveness is subjective. The benefits of environmental and cultural training, which is designed to enhance worker sensitivity to Alaska's environment and Native people, can not be reduced to economic terms, nor can specific examples be provided showing that environmental damage or social disruption was avoided or reduced by requiring that training. Nevertheless, the department believes that benefits (ie. reduced problems) are obtained by requiring those programs. The state's support for environmental and cultural training contributes to local community perception that the state's is committed to sound resource development. From industry's viewpoint, the environmental and cultural training of its employees enhances the public image of the corporation.

Although the state derives certain intangible benefits from environmental and cultural training programs, those programs are not essential to the absolute economic success of oil and gas development within the state. For this reason, the training requirement could be dropped. However, the department does not believe that environmental and cultural training is a costly requirement. The training programs are rather generic, and are readily adaptable for use throughout Alaska. Once produced, the company's environmental and cultural training program can be used to educate its employees prior to conducting activities on any of its current and future oil and gas leases.

3. Removal of drilling sites, roads, buildings, airstrips, or other facilities and rehabilitation of the site.

a. Type of stipulation: The requirement to remove all facilities and rehabilitate the site is a term of sale. Generally, upon abandonment of drilling sites, the lessee must remove all roads, buildings, airstrips or other facilities, and rehabilitate the area unless the department determines that such removal and rehabilitation is not in the state's best interest.

b. Purpose: No specific statutory authority exists to require facility removal and site rehabilitation. The department's authority to require facility removal and site rehabilitation falls under its broad discretionary powers (Title 38) for land use management. AS 38.05.180 provides that it is in the state's best interest to "minimize the adverse impact of exploration, development, production, and transportation activity." The lease contract includes the specific rehabilitation and abandonment language. Title 11 of the department's regulations requires that a rehabilitation and abandonment plan be submitted for approval. Although facility removal and site rehabilitation are not specifically provided for under state statute, the department believes that such a requirement is a useful mitigation tool, which reduces the environmental issues associated with oil and gas development. The state's leasing strategy calls for protection of "the integrity of affected cultures, the environment, and fish and wildlife resources through the terms of the plans of operations, lease and permit stipulations, and monitoring of lease operations.

c. Effectiveness: To date, the state has had limited experience upon which to judge the effectiveness of this term. Most North Slope and Cook Inlet fields are still active. Only a few drilling sites have been abandoned and only minor amounts of rehabilitation work has been done. Basically, facilities on those abandoned sites have been removed and the underlying gravel used for other purposes. Rehabilitation on the North Slope is still experimental; only a few very short roads and other impacted areas have been reclaimed. In the Beaufort Sea, a number of drilling islands have been abandoned. On those islands, all facilities and slope protection have been removed, and the island left to erode away.

The effectiveness of the term perhaps is best exemplified by the site rehabilitation work conducted on an oil and gas lease on the Alaska Peninsula. In 1984, the state permitted construction of a drilling site and airstrip on an Amoco lease near Becharof Lake. As a condition of that permit, the lessee was required to remove all facilities, decommission the airstrip, and rehabilitate the area upon abandonment of the site. Although no concerted effort has been made by the state to specifically document results, the restoration work appears to have been successful.

4. Documentation of Alaska hire

The department no longer requires documentation of Alaska hire. Instead, the department only encourages lessees to hire and employ local and Alaska residents and companies to the extent they are available and qualified for work performed on the leased area.

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The following lists contain the standard stipulations the Division of Land and Water Management would normally attach to an industry request for a permit to construct a development drill site and an exploratory drill site (winter operation). Please note that there are often special stipulations attached to these type of permits that are "tuned" specifically for that operation and setting. These types of stipulations are usually aimed at unusual access, terrain, timing, environment, and construction.

STANDARD STIPULATIONS FOR DEVELOPMENT DRILL SITES

1. Vehicles shall be operated in a manner such that the vegetative mat of the tundra is not disturbed and blading or removal of tundra vegetative cover is prohibited except as approved by the Director of the Division of Land and Water Management or his designee. This stipulation is intended to protect the vegetative mat from being removed from the underlying substrate exposing soils to thermal degradation or hydraulic erosion. (6 AAC 80.040, 6 AAC 80.130, 6 AAC 80.140)
2. On-tundra travel shall be subject to termination within 72 hours of notification by the Director of the Division of Land and Water Management or his designee for protection of surface vegetation from being removed from the underlying substrate exposing soils to thermal degradation or hydraulic erosion. (6 AAC 80.040, 6 AAC 80.130, 6 AAC 80.140)
3. Ice roads and/or ice pads may be constructed in the work areas as long as they are thick enough to prevent damage to the tundra and underlying substrate. No other ice roads are authorized under this permit. (6 AAC 80.130, 6 AAC 80.140)
4. Tundra travel shall be limited to that area to be impacted with gravel placement. This stipulation is to protect the tundra surface outside the area of construction. (6 AAC 80.130)
5. The crossing (e.g., installation of a drainage structure, placement of an obstruction, diversion, etc.) of any fish stream (e.g., resident or anadromous fish species) requires a Title 16 (A.S. 16.05.840) permit from the Alaska Department of Fish and Game (479-0862). This stipulation is to allow for the free passage of resident or anadromous fish and to protect bank habitat, prevent soils erosion, and maintain natural drainage patterns. (AS 16.05.870, 6 AAC 80.130, 6 AAC 80.040)
6. Adequate culverting shall be installed to maintain surface drainage patterns and to prevent ponding. This stipulation is necessary to protect surface habitats and prevent erosion. (6 AAC 80.070, 6 AAC 80.130)
7. Fuel storage facilities shall not be placed within 100 feet of water bodies and must be within an impermeable diked area of 110 percent capacity of the largest independent fuel container. Manifoldd tanks, day tanks, or bladders must be considered as a container. This stipulation is to protect the state's lands, waters, and habitats from potential fuel leaks and spills. (6 AAC 80.070, 6 AAC 80.130)
8. The reserve and fuel pits shall be rendered impermeable. This stipulation is intended to stop the leaching of hydrocarbons through the pit walls and into the lands and waters of the state. (6 AAC 80.070, 6 AAC 80.130)
9. All oil and hazardous material spills shall be cleaned up and reported per 18 AAC 75.080. Phone 1-800-478-9300 to report spills. This stipulation is intended to insure the proper reporting, clean-up, and handling of hazardous material spills as well as protect the tundra environment from such spill. (6 AAC 80.140, 6 AAC 80.130)

10. Relief pits and flare pits are not required to be rendered impermeable as long as they are only utilized for their designed purpose. Any other uses (e.g., mud storage, etc.) are prohibited. If emergency uses are required, they must be reported to the Northern Regional Office of the Department of Environmental Conservation and cleanup operations started within 72 hours after the emergency has come under control. This stipulation is intended to insure that all potential hazardous materials are removed from unlined pits to protect adjacent habitat and waters from possible leaching of materials into these areas. (6 AAC 80.070, 6 AAC 80.130)
11. All flow test holding facilities shall be lined and diked to 110% of the containment tanks. This stipulation is to insure containment of hydrocarbons within a specified area around the portable testing facilities in the event of a leak or break thereby protecting the state's lands, waters and habitat from potential contamination and loss. (6 AAC 80.070, 6 AAC 80.130)
12. Amendments or modifications to this permit must be approved in writing by the Director of the Division of Land and Water Management or his designee.
13. Gravel will be removed from state approved sources at which blasting may be required to complete gravel operations. Approval of this lease operation authorizes such blasting. Accounting for all utilized fill material will be pursuant to the existing material sales contract.
14. The Director of the Division of Land and Water Management shall be informed in writing of all ongoing, approved, development phases involving the placement of additional material on the tundra.
15. The Director of the Division of Land and Water Management may require that his authorized representative be on-site during any operations conducted under this permit.
16. The permittee shall inform and ensure compliance with these stipulations by its agents, employees, and contractors (including subcontractors at any level).
17. Flowline routing and placement shall be approved by the Director of the Division of Land and Water Management prior to installation.
18. As stated in Director's Policy File FY 80-20, a certified as-built survey of permanent improvements will be supplied to the Division of Technical Services within 120 days after completion of gravel placement.

STANDARD STIPULATIONS FOR EXPLORATORY DRILL SITES

1. Vehicles shall be operated in a manner such that the vegetative mat of the tundra is not disturbed and blading or removal of tundra or vegetative cover is prohibited except as approved by the Director of the Division of Land and Water Management or his designee. Filling of low spots and smoothing by the use of snow and ice is allowed. Ice or snow bridges constructed at stream crossings shall not contain extraneous material (i.e., soil, rock, brush, or vegetation) and shall be removed immediately after use or prior to break up. Where necessary, river ice slotting shall take place to facilitate water flow during break-up. This stipulation is intended to protect the vegetative mat from being removed from the underlying substrate exposing soils to thermal degradation or hydraulic erosion. (6 AAC 80.040, 6 AAC 80.130, 6 AAC 80.140)
2. On-tundra travel shall be subject to termination within 72 hours of notification by the Director of the Division of Land and Water Management or his designee for protection of surface vegetation from being removed from the underlying substrate exposing soils to thermal degradation or hydraulic erosion. (6 AAC 80.040, 6 AAC 80.130, 6 AAC 80.140)
3. Summer on-tundra travel shall require specific approval from an authorized field representative of the Division of Land and Water Management and shall be limited to vehicle types and time periods approved by this division. This stipulation is intended to protect the vegetative mat from destruction and exposure of the substrate soils and subjecting the areas to thermal degradation or hydraulic erosion. (6 AAC 80.040, 6 AAC 80.130, 6 AAC 80.080, 6 AAC 80.140)
4. The winter operation of ground contact vehicles for off-road travel must be limited to those areas which have adequate ground frost and snow cover to prevent damage to the ground surface from the destruction of the surface vegetation and subsequent exposure of substrate soils which can lead to thermal degradation or hydraulic erosion. (6 AAC 80.140, 6 AAC 80.130, 6 AAC 80.080)
5. Winter on-tundra travel may begin when adequate snow cover and frost depth conditions exist to protect the tundra vegetative mat from disturbance from the activities intended. Tundra opening is determined by an authorized field representative of the Division of Land and Water Management. With prior approval certain on-tundra activities may begin sooner than others depending on the impact or magnitude of the operations. (6 AAC 80.130, 6 AAC 80.140, 6 AAC 80.080)
6. Movement of equipment through willow (*Salix*) stands shall be avoided where possible. This stipulation is intended to protect the areas willow stands which are a limited habitat, valuable for browse and erosion control. (6 AAC 80.130, 6 AAC 80.140)
7. Incinerator residue shall be backhauled to a solid waste disposal site approved by the Department of Environmental Conservation. This stipulation is intended to protect state lands, habitats, and water from unauthorized solid waste disposal. (6 AAC 80.130, 6 AAC 80.140)

8. Ice or snow roads shall be thick enough to prevent damage to the tundra vegetation. This stipulation is intended to protect the vegetative mat from being removed from the underlying substrate exposing soils to thermal degradation or hydraulic erosion. (6 AAC 80.130, 6 AAC 80.140)
9. Trash, survey lath, roadway markers, and other debris that has accumulated along the ice road or cross country tundra routes shall be cleared and picked up prior to freeze-up of the following winter. This stipulation is intended to prevent accumulation of solid waste on the tundra and to prevent the loss of and contamination of habitat. (6 AAC 80.130, 6 AAC 80.140)
10. Vehicle maintenance, campsites, and/or storage and stockpiling of material on the surface ice of lakes, ponds, or rivers is prohibited. This stipulation is intended to protect the surface waters and habitat, and adjacent state lands from possible contamination through the loss of hydrocarbons or any other hazardous substance. (6 AAC 80.130, 6 AAC 80.140)
11. All drilling muds and cuttings must be disposed of in a manner approved of by the Department of Environmental Conservation. This stipulation is intended to prevent surface contamination and subsequent habitat loss and insure proper disposal of contaminated fluids. (6 AAC 80.130, 6 AAC 80.140)
12. Fuel storage facilities shall not be placed within 100 feet of water bodies and must be within an impermeable diked area of 110 percent capacity of the largest independent fuel container. Manifolded tanks, day tanks, or bladders must be considered as a container. This stipulation is to protect the state's lands, waters, and habitats from potential fuel leaks and spills. (6 AAC 80.070, 6 AAC 80.130)
13. The reserve and fuel pits shall be rendered impermeable. This stipulation is intended to stop the leaching of hydrocarbons through the pit walls and into the lands and waters of the state. (6 AAC 80.070, 6 AAC 80.130)
14. All oil and hazardous material spills shall be cleaned up and reported per 18 AAC 75.080. Phone 1-800-478-9300 to report spills. This stipulation is intended to insure the proper reporting, clean-up, and handling of hazardous material spills as well as protect the tundra environment from such spills. (6 AAC 80.140, 6 AAC 80.130)
15. All flow test holding facilities shall be lined and diked to 110% of the containment tanks. This stipulation is to insure containment of hydrocarbons within a specified area around the portable testing facilities in the event of a leak or break thereby protecting the state's lands, waters and habitat from potential contamination and loss. (6 AAC 80.070, 6 AAC 80.130)

16. The Alaskan Historic Preservation Act (A.S. 41.35.000) prohibits the appropriation, excavation, removal, injury, or destruction of any historic, prehistoric or archeological site, or camp, either active or abandoned, shall be disturbed in any manner nor shall any item be removed therefrom. Should any sites be discovered during the course of field operations, the Commissioner of the Department of Natural Resources shall be promptly notified. (6 AAC 80.150)
17. Amendments or modifications to this permit must be approved in writing by the Director of the Division of Land and Water Management or his designee.
18. Gravel will be removed from state approved sources at which blasting may be required to complete gravel operations. Approval of this lease operation authorizes such blasting. Accounting for all utilized fill material will be pursuant to the existing material sales contract.
19. The Director of the Division of Land and Water Management may require that his authorized representative be on-site during any operations conducted under this permit.
20. The permittee shall inform and ensure compliance with these stipulations by its agents, employees, and contractors (including subcontractors at any level).
21. This permit applies only to those lands under the jurisdiction of the State of Alaska.
22. Water appropriation is not authorized under this permit.
23. Gravel road construction is not authorized under this permit.
24. Approval of this permit does not relieve the permittee of the responsibility of securing other permits, state, federal or local.

MEMORANDUM

State of Alaska

DEPARTMENT OF FISH AND GAME

TO: Robert L. Grogan
Director
Division of Governmental
Coordination
Office of Management
and Budget

DATE: September 17, 1987

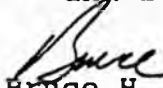
FILE NO.:

TELEPHONE NO.: 465-4105

SUBJECT: State Oil and Gas
Stipulation Review

RECEIVED
SEP 22 1987

DIVISION OF OIL & GAS
STATE OF ALASKA

FROM: 
Bruce H. Baker
Acting Director
Habitat Division
Department of Fish and Game

Following are the Department of Fish and Game's (ADF&G) responses to comments raised by the Alaska Oil and Gas Association (AOGA) in their April 3 letter regarding state oil and gas stipulations and permit requirements. With the exception of Item 4 regarding environmental training programs, we have limited our responses to the comments specifically assigned to ADF&G. As previously agreed, a summary of the ADF&G statutes and regulations referenced in our material is enclosed.

Prior to responding to individual comments, the department would like to discuss three general items relevant to the stipulation review. We request that these general comments be included in the introduction of the final report to the Cabinet.

GENERAL COMMENTS

First, it is important to note that all of the state's oil and gas lease sale terms include a feasibility and prudence clause. In both formulating and implementing lease terms, the state recognizes that it must bear in mind available technologies and cost considerations, as well as sociocultural and environmental factors. These are carefully considered when the state applies stipulations to industry activities.

Second, it should be noted that the best interest findings prepared for each lease sale describe all of the information utilized by the state in reaching a sale decision. This includes relevant scientific research and the state's rationale for adopting specific mitigation measures. Because these measures are frequently based on a large body of information, the stipulation review does not attempt to reiterate everything considered in their formulation. Rather, the review focuses on the statutory and regulatory basis for the measures, and whether scientific evidence indicates that they are effective.

Third, specific mention should be made of the relationship between state oil and gas mitigation measures and the Alaska Coastal Management Program (ACMP). All state lease

sales that are located within the coastal zone are carefully reviewed to ensure consistency with the ACMP. In many instances, compliance with state mitigation measures is necessary to conform with specific guidelines in ACMP district plans.

SPECIFIC COMMENTS

1. Stipulation 4: Requirement for Environmental Training of All Personnel Involved in Drilling Programs

The Department of Natural Resources (ADNR) was assigned lead responsibility for addressing this comment in conjunction with the other agencies. Our department recommends that the following information be incorporated into ADNR's response. First, environmental training programs are not necessarily required for each individual sale area, and we have not seen any evidence that industry has prepared sale-specific programs. The state's term of sale is worded such that a single program could be used for multiple sale areas, provided that it is applicable. Second, experiences with the Alyeska Oil Pipeline, Prudhoe Bay and Kuparuk oil fields, Northwest Alaskan Pipeline preconstruction activities, and exploration in the Arctic National Wildlife Refuge clearly demonstrate that environmental training of personnel is one of the most effective ways to ensure compliance with permit terms and conditions. Third, the value of environmental training programs is also recognized by federal leasing agencies (i.e., the Minerals Management Service and Bureau of Land Management), as evidenced by a similar training stipulation in federal lease sale documents.

2. Stipulation 7: Pipelines Constructed to Allow Safe Passage of Caribou

- a. Type of Stipulation: In sale areas that encompass caribou habitat, the state requires that pipelines be designed, sited, and constructed to allow free passage of caribou. Common techniques include adequate elevation, ramping, burial of pipelines, and separation of pipelines and roads to dilute visual and audio stimuli.
- b. Purpose of Stipulation: Linear developments, particularly road and pipeline complexes, can disrupt caribou movements and distribution patterns (e.g., Cameron and Whitten 1980, Curatolo and Murphy 1983). Pursuant to AS 16.05.020, it is necessary to minimize disruption of big game movements among seasonally important habitats.

c. Effectiveness: This stipulation has been moderately effective in maintaining caribou access to important habitats. A good example is the Kuparuk oilfield, where this stipulation was applied, in comparison with the Prudhoe Bay oilfield, where the stipulation was not applied until after most of the infrastructure was in place. Although there has been minor to moderate disruption of caribou movement through the Kuparuk oilfield, caribou movement through the Prudhoe Bay oilfield have all but ceased since development began there in the early 1970s. The combination of heavy traffic, high density of facilities, and batteries of aboveground feeder lines with inadequate ground clearance have all contributed to the reduction of caribou movement through the Prudhoe Bay oilfield. Although traffic remains a problem that has not been sufficiently addressed in the Kuparuk oilfield, measures for providing caribou passage have been incorporated into flowline design there. Without a caribou passage stipulation in place, there would have been no incentive for industry to research, design, and evaluate the effectiveness of various passage techniques.

3. Stipulation 8: Additional Biological Surveys Required at the Discretion of the Permitting Agency

- a. Type of Stipulation: The state rarely implements lease stipulations that require lessees to conduct biological research. State unit agreement and permit approvals may occasionally include survey provisions. More frequently, federally permitted projects (e.g., Endicott), for which the state serves in an advisory capacity, contain survey requirements.
- b. Purpose of Stipulation: Because there is a relative paucity of data about fish and wildlife resources and habitat use, and the effects of development activities on such resources, many of the decisions made by resource agencies are of necessity based on scientific professional judgment rather than strictly on statistical analysis. In those instances in which virtually no information is available or industry does not agree with the professional judgment of agency biologists, further studies may be required to fill data gaps and to resolve disagreements. The responsibility for conducting studies is often placed on the company requesting the permit or other action, because it is their project that will potentially impact biological resources.

Various authorities are involved when permitting agencies such as ADNR or the U.S. Army Corps of Engineers (COE) require biological surveys (e.g., 11 AAC 83.343 and 33 U.S.C. 1344; 86 Stat. 884).

- c. Effectiveness: Effective mitigation of potential impacts to fish and wildlife requires several general types of information: (1) the species present and their use of habitat in the proposed project area; (2) the anticipated impacts of the proposed project on the species and their habitat use; and (3) the measures that should be taken to avoid or minimize these impacts. The first type of information is equivalent to baseline studies that, under ideal conditions, should be conducted prior to the project so that the impacts of the project can be evaluated by comparing species and habitat use with the project in place. Unfortunately, this type of information is limited for most areas of Alaska. Because oil and gas development proceeds at an accelerated pace relative to the timeframe for gathering baseline information, many such studies are conducted concurrently with development. Therefore, extrapolation of the post-development condition to pre-development condition is required, rather than a direct comparison. This extrapolation requires scientific judgments which are then subject to disagreement between the agencies and industry. An example of this is the Endicott monitoring study required by the COE to document potential changes in fish use of the nearshore marine environment as a result of the Endicott causeway.

The effectiveness of this stipulation is variable. When the agencies are significantly involved in determining the scope and evaluating the design of the studies to ensure that they actually answer the questions posed by the agencies, the effectiveness of this stipulation is usually good. For example, Northwest Alaska Pipeline Company's study of recommendations to minimize human/carnivore interactions along the gas pipeline was a successful study involving agency participation. However, when the agencies are not involved in such a manner, or when the agencies do not agree among themselves on the scope and design, the effectiveness of this stipulation is poor.

In some cases the effectiveness of this stipulation cannot be immediately evaluated. Often, the results of studies may not directly benefit the project for which the study was required, but may benefit similar projects in the future. In this case, it is tempting

to view the overall stipulation as ineffective in providing answers for questions about impacts and mitigation, when in fact the lessons learned may provide more effective mitigation in future projects. Because there are so many data gaps about impacts of oil and gas development on Alaska fish and wildlife, most of our information base is expanding as we are developing oil and gas infrastructure, and lessons learned in earlier studies must be applied as additional development occurs.

4. Stipulation 11: Prohibition of Use of Stream Water in Winter Operations

- a. Type of Stipulation: The state routinely imposes a stipulation on North Slope leases that prohibits winter water removal from fish-bearing waterbodies unless approved by ADNR or ADF&G, depending on which agency has jurisdiction.
- b. Purpose of Stipulation: Overwintering habitat is thought to be one of the main limiting factors on North Slope anadromous and freshwater fish populations. Consequently, this stipulation has been applied to prevent drawdown of water in fish overwintering areas. For activities in streams under ADF&G jurisdiction, this stipulation is necessary to ensure compliance with AS 16.05.020, AS 16.05.840 and AS 16.05.870
- c. Effectiveness: This stipulation is very effective in minimizing the loss of overwintering habitat. Prior to implementation of this stipulation on the North Slope, winter water withdrawals during oil and gas operations resulted in documented fish mortality. Since this stipulation was implemented, alternatives to winter water withdrawal from fish-bearing streams have been used. Examples include flooded gravel pits and natural lakes that do not support overwintering fish. Use of these alternatives has eliminated fish mortality resulting from dewatering of overwintering habitat.

5. Stipulation 14: Trade-offs Required to Compensate for Habitat Disturbance from Gravel Removal

- a. Type of Stipulation: There are several measures routinely applied to state leases which restrict gravel removal from active floodplains. In essence, these measures encourage the use of existing material sites, abandoned gravel structures, and upland sites.

- b. Purpose of Stipulation: These measures are necessary to minimize potential impacts of gravel extraction on fish resources and to ensure compliance with AS 16.05.020, AS 16.05.840, and AS 16.05.870.
- c. Effectiveness: These measures have proven effective in accomplishing the above objectives. In the 1970s, shallow gravel scraping operations in the Sagavanirktok River caused channel diversions, impoundments, and fish entrapment. In some instances, these impacts coupled with those of water removal, resulted in the dewatering of fish overwintering areas. In an attempt to minimize problems arising from in-stream gravel mining and inadequate natural water supplies, the state began encouraging the use of gravel pits. After these sources have been exhausted, the pits can then be used as water reservoirs.

There are now approximately 17 gravel pits in the Prudhoe Bay and Kuparuk oilfields. These pits range in size up to 100 acres, such as the Duck Island site used to build the Endicott causeway. Use of these pits has unquestionably reduced impacts to North Slope rivers and fish resources through simple avoidance of floodplain gravel mining (refer to Item 5, Habitat Area Avoidance). However, because of the increasing number and size of gravel pits, the state has recently begun evaluating appropriate restoration approaches. Current thinking is that these pits could potentially provide waterfowl and fish habitat by leaving some shallow water areas and islands in the pits when gravel is extracted and, once exhausted, connecting them to natural fish-bearing streams.

To date, approximately half of the North Slope gravel pits have been filled with water. Fish sampling at these sites has confirmed that gravel pits can provide fish habitat. Although these pits were not designed to promote fish use; a total of six species of fish have been caught at these sites, with the greatest diversity (i.e., four species) found at Sag. Site C. Thus far, only one of the North Slope gravel pits has included design features specific to creating waterfowl habitat. This effort was just initiated and insufficient time has elapsed to evaluate its effectiveness.

It should also be noted that the state's gravel removal restrictions do not absolutely prohibit mining in active floodplains. River sources could potentially be used in conformance with the previously referenced statutes, provided that appropriate design and restoration features are incorporated into floodplain mining plans.

6. Sale 45A (North Slope), Stipulation 5: Habitat Area Avoidance
- a. Type of Stipulation: There are nine Sale 45A measures that conditionally require habitat area avoidance: (1) a general provision requiring avoidance of sensitive fish and wildlife habitats; (2) permanent facility setbacks from fish-bearing waterbodies; (3) restrictions on development in particularly productive wetland habitats; (4) restrictions on gravel mining in active floodplains; (5) measures governing aircraft operations over high density waterfowl and caribou use areas; (6) limitations on certain activities in preferred polar bear denning habitat; (7) restrictions in the immediate vicinity of arctic peregrine falcon nest sites; (8) a facility prohibition within critical tundra swan staging habitat; and (9) possible restrictions in high density caribou calving grounds.
- b. Purpose of Stipulation: All of these measures are necessary to minimize potential impacts on fish and wildlife resources, and to comply with AS 16.05.020. This statutory mandate applies to all "fish, game and aquatic plant resources," not just endangered species. Mitigation measures designed to minimize potential development-related impacts to peregrine falcons are necessary to ensure compliance with AS 16.20.185 and the federal Endangered Species Act of 1973. Measures applicable to polar bears are necessary to ensure compliance with the Marine Mammal Protection Act of 1972.
- c. Effectiveness: Numerous studies have documented that low-level aircraft overflights can adversely affect wildlife. Examples of impacts include: inducement of escape behavior in waterfowl (e.g., Barry and Spencer 1976; Owens 1977; Derksen et al. 1979); loss of eggs due to predation (Barry and Spencer 1976); reduced waterfowl nesting success and production of young (USDI 1976); and inducement of escape response in caribou (Calef et al. 1976, Davis and Valkenburg 1979). Considering this, and the routine use of aircraft to support oil and gas activities, restrictions on low level overflights above high density waterfowl and caribou use areas are both justifiable and prudent.

The restriction on activities in the immediate vicinity of arctic peregrine falcon nests used by the state are the same measures recommended by the National Peregrine Falcon Recovery team. These setbacks and timing

restrictions are judged to be effective in minimizing impacts to nesting peregrines. Similarly, lease terms limiting some activities in preferred polar bear denning habitat, swan nesting areas, and active flood plains have been developed by the acknowledged Alaskan authorities on those species and habitats. These terms have been carefully crafted and balanced to allow for the widest range of lease related activities, while still minimizing detrimental effects to important wildlife resources.

7. Sale 49 (Cook Inlet), Stipulations 1 and 2: Wetlands Designation/ Restrictions and Critical Habitat Areas/Waterfowl Corridors

- a. Type of Stipulation: Both of these comments apparently refer to Sale 49 Terms 32 and 38, rather than Term 33 as indicated in AOGA's letter. These terms primarily address mitigation measures applied to leases located in legislatively designated state game refuges (SGR) and critical habitat areas (CHA). Consequently, it is appropriate to respond to both items collectively.

Term 32, in part, includes a prohibition on surface entry in the Clam Gulch CHA and on tidelands and wetlands in the Kalgin Island CHA and Goose Bay SGR. Exploration, development, and major maintenance activities in primary waterfowl areas within the Susitna Flats and Trading Bay SGRs are also restricted to the period between November 1 and March 31 (i.e., winter operations). Term 38 includes a prohibition on surface entry in high density tule goose and trumpeter swan nesting and molting areas in the Trading Bay SGR and Redoubt Bay vicinity. It also includes the above noted November 1 through March 31 restriction for adjacent habitats important to these species.

- b. Purpose of Stipulation: These measures are necessary to ensure compliance with AS 16.05.020, AS 16.20.036, AS 16.20.038, and AS 16.20.220-270, and are consistent with 5AAC95. As discussed in the enclosure, legislation creating the vast majority of Cook Inlet SGRs and CHAs specifically mandates that land use activities in these areas must be compatible with protection of fish and wildlife populations and habitats. Activities within the Susitna Flats and Trading Bay SGRs must also be compatible with public use of these resources. The mitigation measures imposed in these areas are necessary to ensure compatibility.

- c. Effectiveness: With respect to the surface entry prohibitions, the biological benefits derived from avoiding habitat alteration have been previously noted in the response to AOGA's comments on Sale 45A, Stipulation 5. The state implements this prohibition on the least amount of acreage required to ensure compliance with legislative mandates. Consequently, the state has been able to offer these areas with the covenant that any underlying hydrocarbon resources be extracted through directional drilling.

The necessity for a seasonal restriction in other important waterfowl areas is supported by scientific studies documenting that oil and gas activities can adversely affect waterfowl. Examples of documented impacts resulting from low level aircraft overflights are provided in the response to AOGA's general comments, Stipulation 14. Activities such as drilling and the operation of gas compressors have also been shown to cause waterfowl avoidance of these activities (e.g., USDI 1976, Gollop and Davis 1974). In two studies, waterfowl avoided drill rigs within a radius of 1.5 and 2.75 miles (Barry and Spencer 1976, Gollop and Davis 1974).

That concludes the department's contribution to the state oil and gas stipulation review. If your staff has any questions or requires further information, please have them contact Claudia Slater in our Anchorage office (267-2346).

Enclosure

cc w/Enclosure:

Yurt Fredricksson, DGC, Juneau
Elizabeth Benson, DGC, Fairbanks
Alvin Ott, ADF&G, Fairbanks
Lance Trasky, ADF&G, Anchorage
Larry Dietrick, ADEC, Fairbanks
Michael Wheeler, ADEC, Anchorage
Jerry Brossia, ADNR, Fairbanks
Bill Van Dyke, ADNR, Anchorage

ENCLOSURE

ADF&G STATUTES AND REGULATIONS RELEVANT TO
STATE OIL AND GAS MITIGATION MEASURES

AS 16.05.020: This statute describes the functions of the Commissioner of ADF&G. Among other responsibilities, the Commissioner is to manage, protect, maintain, improve, and extend the fish, game, and aquatic plant resources of the state in the interest of the economy and general well-being of the state.

AS 16.05.840: The purpose of this statute is to ensure fish passage in all fish-bearing streams. If the Commissioner of ADF&G considers it necessary, dams and other obstructions across fish streams must include a fishway and/or device which allows for efficient passage of downstream migrating fish.

AS 16.05.870: This statute gives the Commissioner of ADF&G jurisdiction over activities affecting waterbodies specified as important for the spawning, rearing, or migration of anadromous fish. The Commissioner is authorized to regulate hydraulic projects and any other activities that use, divert, obstruct, pollute, or change the natural flow or bed of a specified waterbody or to use wheeled, tracted, or excavating equipment or log-dragging equipment in the bed of a specified waterbody.

AS 16.20.030(c): This statute established the Goose Bay State Game Refuge (SGR) in conformance with AS 16.20.020, which states that the purpose of the refuge is to protect and preserve the area's natural habitat and game populations.

AS 16.20.036: The Susitna Flats State Game Refuge (SGR) was established through this statute. The two primary purposes of the refuge are to protect: 1) fish and wildlife habitats and populations; and 2) public uses of fish and wildlife and their habitat. Among other species, waterfowl are specifically mentioned. This statute further states that entry onto the refuge for purposes of oil and gas exploration and development shall be permitted when compatible with the primary purposes of the refuge.

AS 16.20.038: This statute established the Trading Bay SGR, which was created for the same purposes, and is subject to the same compatibility requirements, as noted above for the Susitna Flats SGR.

AS 16.20.185: The purpose of this statute is to protect the habitat of endangered species. On lands under their respective jurisdictions, the Commissioners' of ADF&G and

ADNR must take measures to preserve the natural habitat of species or subspecies of fish and wildlife threatened with extinction.

AS 16.20.220-270: Eleven Critical Habitat Areas were established under these statutes. The purpose of these statutes is to protect and preserve habitat areas especially crucial to the perpetuation of fish and wildlife, and to restrict all other uses not compatible with the primary purpose.

5AAC 92.800: This administrative code identifies fish and wildlife species on the state endangered species list. There are currently five species of birds and three species of whales designated by the state as endangered.

5AAC 95: This administrative code, in part, gives the Commissioner of ADF&G authority to include conditions on Special Area permits to ensure compliance with AS 16.20.030(c), AS 16.20.036, AS 16.20.038, and AS 16.20.220-270. Permit conditions may include, but are not limited to, restrictions on the duration of a proposed activity, seasonal restrictions, limitations on the areal extent of an activity, specific mitigation measures, and reporting and monitoring requirements. Additionally, this code states that each permittee shall mitigate any anticipated or actual adverse effects upon fish, wildlife, or their habitat which result from the permittee's activities..

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INFORMATION PACKET FOR STATE OF ALASKA
OIL AND GAS LEASE SALES 50, 51 AND 54

This packet contains information about State of Alaska oil and gas lease sales 50 and 51 and proposed lease sale 54. Sales 50 and 51 share a common boundary with the Arctic National Wildlife Refuge (ANWR). Sales 50 lies immediately offshore of ANWR in Camden Bay. It was held in June 1987. Sale 51 lies west of ANWR in an area known as the Prudhoe Bay Uplands. It was held in January 1987.

Sale 54 is a proposed lease sale scheduled for January 1988. The proposed Sale 54 area lies adjacent to the National Petroleum Reserve Alaska (NPRRA).

The packet of information includes the Notice of Sale for sales 50 and 51 and the Notice of Final Finding for proposed sale 54. Each notice of sale contains sale-specific information provided to bidders, including the bidding methods, lease term, and mitigation measures. The Sale 54 notice advises potential bidders of the state's intention to make a final finding and decision regarding the sale. Attached to the Notice of Final Finding is a list of proposed mitigation measures for the Sale 54 area. Each notice includes a map of the respective sale area.

BEAUFORT SEA

65

50

55

54

51

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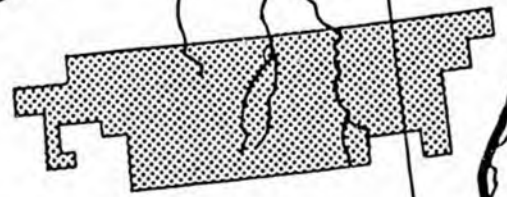
ARCTIC NATIONAL
WILDLIFE REFUGE

ASKA

Colville River

Canning River

STATE OIL AND GAS LEASE
SALES LOCATED NEAR A.N.W.R.

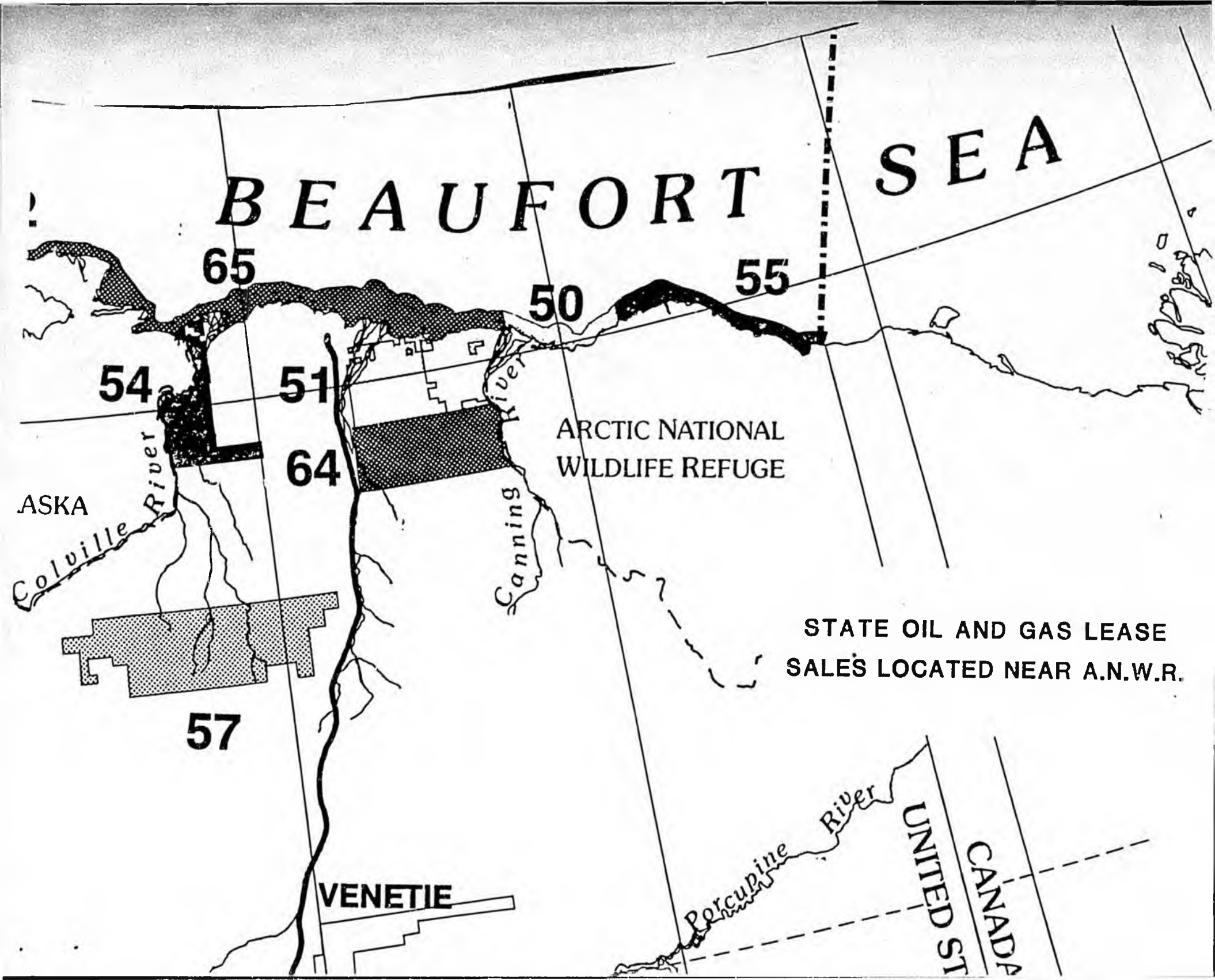


57

VENETIE

Porcupine River

UNITED STATES
CANADA



STATE OF ALASKA

STEVE COWPER, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

PO. BOX 7034
ANCHORAGE, ALASKA 99519-7034

April 30, 1987

Phone: 762-4277

NOTICE OF SALE

STATE OF ALASKA COMPETITIVE OIL AND GAS LEASE SALE 50 (CAMDEN BAY)

The Department of Natural Resources, Division of Oil and Gas (DO&G), gives formal notice under AS. 38.05.945(a)(4) of its intention to offer lands for competitive oil and gas lease. Sale 50 includes 35 tracts with a total area of approximately 118,147 acres. The sale area consists of state owned offshore acreage located in the Beaufort Sea, lying between Flaxman Island and the Hulahula River. The Arctic National Wildlife Refuge (ANWR) lies immediately south of the Sale 50 area. The entire sale area is within the North Slope Borough. The North Slope communities of Deadhorse/Prudhoe Bay, Nuiqsut, Barrow, and Kaktovik may be affected by the sale.

The location of Alaska's Territorial Sea Boundary and the seaward boundary of ANWR are the subjects of a dispute between the United States of America and the State of Alaska. This dispute is pending before the U.S. Supreme Court. At issue is the ownership of a significant amount of tide and submerged land along these borders. The seaward and landward boundaries of the Sale 50 area have been established through negotiation with the U.S. Minerals Management Service and the U.S. Fish and Wildlife Service to ensure that no lands encompassed by this dispute were included in Sale 50. These boundaries are intended only to delineate the limits of Sale 50, and do not represent the official position of either the State of Alaska or the United States of America regarding the final location of the borders of ANWR or the Alaska Territorial Sea.

Bidding Method

The bidding method for all tracts will be cash bonus bidding with a minimum bid of \$5.00 per acre. All tracts will have a fixed royalty rate of 16-2/3 percent.

Length of Lease

All leases issued as a result of Sale 50 will have an initial primary term of 10 years.

Lease Form

All leases issued as a result of Sale 50 will be executed on Form DNR-10-4037 (COMPETITIVE OIL AND GAS LEASE) which was revised in November 1986.

Rental

Annual rental will be \$1.00 per acre for the first year, \$1.50 per acre for the second year, \$2.00 per acre for the third year, \$2.50 per acre for the fourth year, and \$3.00 per acre for the fifth and following years.

Bids also will be accepted from 9:00 a.m. to 4:00 p.m. on June 29, 1987 in Room 1380 (Thirteenth Floor) of the Frontier Building, 3601 "C" Street, Anchorage, Alaska. Bids that are sent by mail must be sent to: Director, DO&G, P.O. Box 107034, Anchorage, Alaska 99510-7034, and must be received by 4:00 p.m., June 29, 1987. Bids that are sent by Federal Express, DHL, or any other delivery service must be received by 4:00 p.m., June 29, 1987, and should be addressed to: Director, DO&G, Room 1380, Frontier Building, 3601 "C" Street, Anchorage, Alaska. The envelope for each bid should be marked "State of Alaska Competitive Oil And Gas Lease Sale 50; not to be opened until 9:00 a.m., June 30, 1987; Tract # _____."

In order to bid at the sale, bidders must pre-qualify no later than 4:30 p.m., June 29, 1987. Potential bidders should consult DO&G for pre-qualification requirements and procedures.

Under 11 AAC 82.445, a bid will not be considered unless supported by the bid deposit and the information required, unless any omission is determined by the Commissioner or her designee to be immaterial or due to excusable inadvertence, and the omission is corrected within one week after receipt of a notice of deficiency.

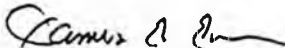
Additional Information

In support of this lease sale, the Director of the Division of Oil and Gas has prepared a written final finding and decision under AS 38.05 035(e) which sets forth the facts and applicable laws upon which he has determined that the proposed action will best serve the interests of the state. The Director's written finding and decision are available at the Division of Oil and Gas, Frontier Building, 3601 "C" Street, Room 1398, in Anchorage or by writing DO&G at P.O. Box 107034, Anchorage, Alaska 99510-7034. Tract maps, Final Legal Descriptions and additional information on the sale are available upon request to bidders and the public at DO&G during regular office hours. The cost for each set of tract maps is \$50.00. Please make checks for these items payable to: Department of Revenue, State of Alaska.

Acreage Deletions

The seaward boundary of Sale 50 has been adjusted since the Preliminary Notice was issued on November 20, 1986. This adjustment has resulted in the deletion of one tract and portions of other tracts which collectively removes a total of 4630 acres of submerged lands from the sale area. Tracts within the sale have been reconfigured and renumbered to reflect these changes.

The state reserves the right to delete tracts, and to revise tract acreage at any time up to and including the day of the sale.



James E. Eason
Director

2. Corporations - Corporations must have the following documents on file at DO&G prior to 4:30 p.m., June 29, 1987:
 - a. Copy of 1987 Certificate of Good Standing.
 - b. The current address and phone number of the corporation.
 - c. A list of current officers of the corporation that are authorized to sign a bid on behalf of the corporation.
 - d. An original or certified copy of a notarized power-of-attorney authorizing any agent who is not a current officer but who has been designated by the corporation to sign a bid on behalf of the corporation.

A Certificate of Good Standing can be obtained by sending 60 cents to State of Alaska, Department of Commerce and Economic Development, Corporation Section, P.O. Box D, Juneau, Alaska 99811, and requesting the certificate. The Certificate of Good Standing provides written proof that the corporation has paid all taxes, complied with all applicable laws, and is thus qualified to do business in the state. If information previously filed by corporations that have previously qualified to do business in Alaska is still current, this information may be incorporated together with a statement as to any material changes or amendments, since formerly qualifying.

3. Corporations That Have Not Previously Qualified To Do Business in Alaska - A corporation that has not previously qualified to do business in Alaska must submit the following documents to DO&G:
 - a. If the corporation is a foreign corporation, it must submit a copy of its Certificate of Authority. If the corporation is a domestic corporation, it must submit a copy of its Certificate of Incorporation. A foreign corporation is one that has been incorporated outside the State of Alaska. A domestic corporation is one that has been incorporated within the State of Alaska.
 - b. The current address and phone number of the corporation.
 - c. A list of current officers of the corporation that are authorized to sign a bid on behalf of the corporation.
 - d. An original or certified copy of a notarized power-of-attorney authorizing any agent who is not a current officer but who has been designated by the corporation to sign a bid on behalf of the corporation.

4. 10:30 a.m. - public reading of the bids will begin in Room 1 of Summit Hall.

D. Form for Submission of Bids

1. A separate bid must be submitted for each tract.
2. Each bid must be submitted separately in a single envelope. The envelope should be marked "State of Alaska Competitive Oil and Gas Lease Sale 50; not to be opened until 9:00 a.m., June 30, 1987; Tract # _____." No other statements, information, or identification should appear on the outside of the envelope.

The following items must be contained in each envelope:

- a. An executed bid form DO&G 1-87 or an exact copy of that form. The bidder or the agent authorized to receive notices on behalf of all bidders should state his or her name, company (if applicable), address, and telephone number on the bid form. All lease-interest percentages must be represented by numbers with the fractional interest carried out to no more than five decimal places. No bids with the lease-interest represented by fractions will be accepted unless the fraction can be expressed in decimals of no more than five digits without rounding off. The sum of the lease-interest ownerships covered by this bid must be exactly 100.00000 percent.
 - b. Bid Deposit: Check or money order made payable to the "Department of Revenue, State of Alaska." Bid deposits must be in U.S. dollars and must be tendered in cash or by money order, cashier's check, certified check, or treasurer's check in the total amount of 20% of the total cash bonus being offered for the tract. Note: Personal checks will not be accepted. No bid for less than a full tract will be considered.
3. Under 11 AAC 82.430, joint bids must disclose, and the bid form must be signed by or on behalf of, each person who has any working interest in the bid or who will receive any working interest in any lease issued in this sale by virtue of any agreement or understanding, oral or written. This requirement does not mean that persons who are interested in a bid only as stockholders in a corporation must sign the bid and lease form, and does not mean that the designated information must be furnished as to those persons. Joint bids must state the percentage of interest of each bidder and must designate one person who is authorized to receive notices on behalf of all the bidders.

E. Method of Handling Bid Deposits and Lease Awards

1. Bid deposits will be safeguarded against theft, misappropriation and loss. Receipt of a bid deposit by the state does not constitute and shall not be construed as acceptance of any bid on behalf of the state.

6. Upon acceptance of a bid by the Commissioner of Natural Resources, the successful bidder will be notified by postal Express Mail of the lease award and will be sent two copies of the lease for signature. Within 30 days of the date that the bidder receives notification of the lease award, the bidder must: 1) sign both copies of the lease; 2) return them to the Division of Oil and Gas for execution; 3) pay the balance of the cash bonus and accrued interest; and 4) pay for the first year annual rental. Interest of 5.66% per annum (which is the market interest rate for 90-day U.S. Treasury bills averaged for the week of March 27 - April 2, 1987) will be charged on the balance of the cash bonus accruing from the date following the successful bidder's receipt of the notification of the lease award up to and including the date of payment. Interest must be paid on the cash bonus only and not on the first year of rental. Payment of the balance of the cash bonus, accrued interest and rental must be accomplished in the following manner:

The successful bidder will wire transfer federal funds in the amount of the balance of the cash bonus and accrued interest, and annual rental for the first year to: First Pennsylvania Bank of Philadelphia, ABA #031000024, for credit to State of Alaska, Account #07/089250/00, Attn: Catherine Hess. The wire transfer should specify on whose behalf the payment is being made. If possible, bidders should use only one wire transfer. Interest calculations should be based on a 360-day year times the actual number of days that interest is owed.

In addition, the successful bidder must by 9:00 a.m. (Alaska Daylight Savings Time) the day before the wire transfer, telex (or facsimile transmit) the following information to the State of Alaska, Department of Revenue, Treasury Division, Attention: Vern Voss at Telex No. 099-45-333, Telecopy #465-2394, and the Department of Natural Resources, Division of Oil and Gas, Telex No. 090-25-360, Telecopy #563-6411:

1. the Alaska Division of Lands (ADL) number assigned to each tract;
2. amount of balance of cash bonus bid being paid per tract, interest on that balance, and annual rental;
3. name(s) of the bidder(s) on whose behalf the funds are being wire transferred;
4. originating bank of the wire transfer; and
5. total amount of wire transfer.

For further information regarding payment and computation of interest, please contact Vern Voss, Cash Manager, Treasury Division, Juneau, Alaska (907) 465-2360.

b. Exploratory Drilling Operations from Floating Drilling Structures

Subject to conditions c and d below, exploratory drilling and other downhole operations above a predetermined threshold depth and testing through casing is allowed year-round from floating structures.

Exploratory drilling below the threshold is prohibited upon commencement of the fall bowhead whale migration until half of the whale population has passed the drillsite, as determined by the National Marine Fisheries Service (in consultation with the Alaska Eskimo Whaling Commission), or until October 1st, whichever occurs first.

c. Exploratory Drilling During the Fall Bowhead Whale Migration

When exploratory drilling activity is authorized and conducted at a location in the main migratory path of the bowhead whale during the whale migration, the operator must conduct a bowhead whale research program to determine the effects of noise from drilling activity and related support activities on bowhead whales and on the subsistence bowhead whale harvest. For exploratory locations between the barrier islands and the main migratory path, a decision on whether a research program is needed will be made on a case-by-case basis.

The general objectives of the research program shall be to determine if the following occurs as a result of noise and disturbance generated from drilling and support activities:

- i. disruption of bowhead whales, or bowhead whale hunters, that makes the subsistence harvest more difficult;
- ii. short-term displacement of bowhead whales from their migratory path, from subsistence harvest areas, or from feeding areas (Information must be collected on distribution, behavior and movement of bowhead whales in the vicinity of the drillsite and of support operations. This information will later be used to determine whether long-term displacement is occurring.); and
- iii. separation of cows and calves.

To ensure that the research program will adequately address these objectives, the operator shall begin consultation with the State of Alaska by April 15. The state will coordinate with the North Slope Borough and appropriate federal agencies to assist the operator in the development and approval of a research program. Unless it is determined by the state that it is not feasible or necessary, the operator shall consult with the state before: (1) the objectives of the research proposal are finalized and sent out to the contractor for bid, (2) the contractor for the project is selected, and (3) the program is finalized. The applicant will retain the authority for final approval and selection of the contractor. The state must approve the research program after consultation is completed.

2. Lessees are advised that the North Slope Borough (NSB) Assembly has adopted a Comprehensive Plan and Land Management Regulations under Title 29 of the Alaska Statutes. The regulations require NSB approval for certain activities necessary for exploration and development of the lease. The state may not in all instances accept this assertion of jurisdiction.
3. During the conduct of all activities related to this lease, the lessee will be subject to the provisions of all valid coastal zone plans and ordinances. The Division of Oil and Gas will require, as a condition for consistency approval of lease operations, such modification or stipulations as may be necessary to ensure consistency with the Alaska Coastal Management Program, and with sound planning and management of coastal zone resources.
4. An application for water rights must be submitted to the Department of Natural Resources prior to diverting, impounding, or withdrawing water from any ground or surface source. The lessee will be responsible for ensuring that an adequate supply of water is available for winter use through development of such means as storage reservoirs and snow melting.
5. The following provisions will govern aircraft operations in and near the sale area:
 - a. Aircraft must fly at altitudes of greater than 1,500 feet (457 m) or at a lateral distance of one mile around barrier islands, lagoons, river deltas, and wetlands within one mile of the Beaufort Sea coast (excluding take-offs and landings) from May 15 through September 30.
 - b. From May 15 to June 20, aircraft flying within 30 miles of the coast between the Canning and Sagavanirktok Rivers must avoid Caribou and Muskoxen by an altitude of 1500 feet (457 m) or a lateral distance of one mile (excluding take-offs and landings).
 - c. Human safety will take precedence over aircraft restrictions.
6. In conducting offshore geophysical surveys, neither lessees nor their agents will use explosives in open water areas. Offshore geophysical surveys will be restricted as necessary to comply with the provisions of the Marine Mammal Protection Act and with the provisions of the Endangered Species Act as they relate to the bowhead whale.
7. An Oil Discharge Contingency Plan will be required for offshore operations as specified under AS 46.04.030 and 18 AAC 75.

Facilities and Structures:

8. With the exception of approved pipelines, permanent facilities will be prohibited within 500 feet (152 m) of the Canning River. Permanent facilities will be prohibited within 100 feet (30 m) of all other fish-bearing streams unless the Director, Division of Oil and Gas, after consultation with the Department of Fish and Game, determines that such facilities placement will not significantly disturb critical wildlife habitats or that such a requirement is not feasible or prudent.

and anadromous fish. Causeways may not be located in river mouths, deltas or the kelp community northeast of Konganevik Point. Causeways may not cause a violation of the Alaska Water Quality Standards (18 AAC 70).

Local Hire:

16. The lessee is encouraged to hire and employ local and Alaska residents and companies, to the extent they are available and qualified, for work performed on the leased area.

Environmental Training:

17. The lessee must include in any exploration and/or development plans a proposed environmental training program for all personnel involved in exploration or development activities (including personnel of the lessee's contractors and subcontractors) for review and approval by the Director, Division of Oil and Gas. The program must be designed to inform each person working on the project of specific types of environmental, social, and cultural concerns which relate to the individual's job. The program must be formulated and implemented by qualified instructors experienced in each pertinent field of study and must employ effective methods to ensure that personnel understand and use techniques necessary to preserve archeological, geological, and biological resources. The program must also be designed to increase the sensitivity and understanding of personnel to community values, customs, and life styles in areas in which such personnel will be operating. The lessee must also submit for review and approval a continuing technical environmental briefing program for supervisory and managerial personnel of the lessee and its agents, contractors, and subcontractors.

Access:

18. No restriction of public access to, or use of, the leased area will be permitted as a consequence of oil and gas activities except in the immediate vicinity of drill sites, buildings and other related structures. Such areas where access is to be restricted must be identified in the plan of operations. No lease facilities or operations may be located where they would block public access to or along navigable and public waters as defined in AS 38.05.965(12) and (16). If lease facilities will be located in the vicinity of these public waters, an easement will be reserved under AS 38.05.127 and 11 AAC 53.330 to ensure the right of public access.
19. Surface use will be restricted, as necessary, to prevent unreasonable conflicts with local subsistence harvests.

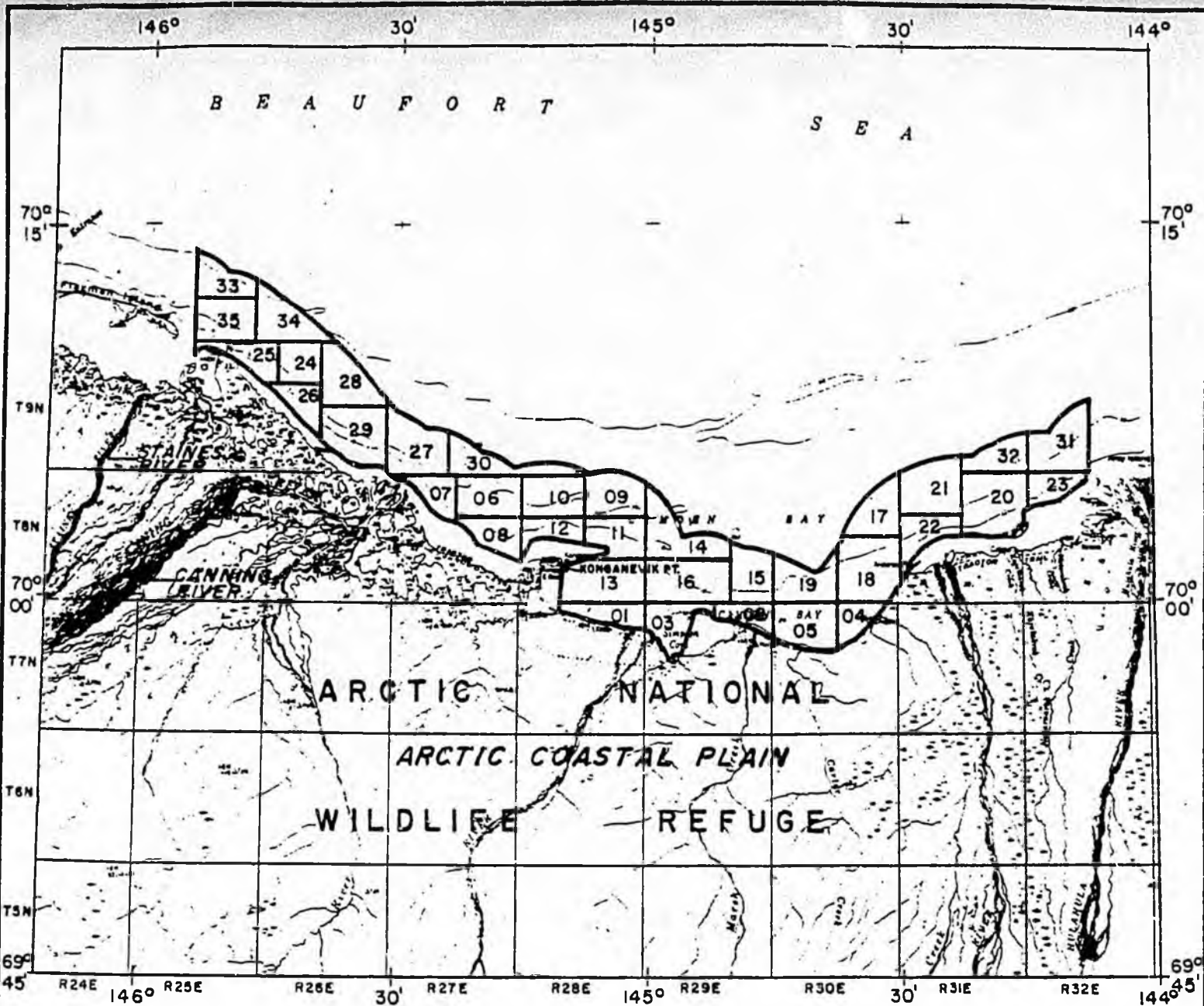
Third Party Interests:

20. If only the subsurface estate is owned by the state, or if the surface is owned by the state but subject to third party interests, the lessee must not enter upon such land until the lessee makes a good faith effort to agree with the surface interest holder on settlement of damages that may be caused by lease activities. If an agreement cannot be reached, the

- b. Disposal of oil-based or oil-contaminated drilling muds and cuttings in offshore waters and on sea ice is prohibited.
- c. Offshore discharge of drilling muds and cuttings is prohibited within 1000 m of river mouths or deltas during unstable or broken ice or open water conditions.
- d. During exploratory drilling, the disposal of drilling muds and cuttings within the two-meter isobath is prohibited during open water conditions. Drilling muds and cuttings free of hydrocarbon contamination may be discharged to open water outside of the two-meter isobath. However, the discharge must be diluted at a ratio of at least nine parts seawater to one part drilling fluid.
- e. When exploratory drilling operations occur during periods of stable ice, uncontaminated drilling muds and cuttings may be disposed of on the sea ice surface in areas free of cracking or major stress fractures. Predilution is not required.
- f. When exploratory drilling operations occur during periods of broken or unstable ice, uncontaminated drilling muds and cuttings may not be discharged unless it is not practicable to store them for disposal on stable sea ice or in open water; to dispose of them on land; to create an on-ice disposal site by pumping and artificial thickening of sea ice; or to handle the muds and cuttings in a manner that prevents below-ice discharge. If it is not practicable to meet these conditions, discharge is subject to approval by the Department of Environmental Conservation.
- g. Offshore disposal of drilling muds and cuttings during development and production will be subject to the conditions of NPDES permits issued by the Environmental Protection Agency and those Alaska Coastal Management Program consistency requirements incorporated in or accompanying the NPDES permit. Injection of liquid wastes through well annuli or dedicated injection wells is the disposal method of choice. The lessees shall employ this method of disposal whenever it is technically feasible.

Gravel Mining:

- 26. In meeting gravel needs for exploration, development and production, gravel from nearby abandoned drilling sites and existing material sites must be used first unless the Director, Division of Land and Water Management, after consultation with the Director, Division of Oil and Gas, and the Department of Fish and Game, determines that the reuse of such sources is not feasible and prudent.
- 27. Gravel extraction from barrier islands is prohibited. Gravel extraction from lagoons and nearshore areas is prohibited unless the Director, Division of Land and Water Management, finds, in consultation with the Department of Fish and Game and the Department of Environmental Conservation, that, on the basis of scientific evidence, gravel extraction in these areas will not adversely affect the environment or that no alternative feasible and prudent source exists.



STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL & GAS
OIL AND GAS LEASE SALE 50
CAMDEN BAY TRACT MAP
 SCALE 1:456,200 1 inch = 7.2 Miles Approx.

6 0 6 12 18 Miles

DIRECTOR, DIV. OF OIL & GAS JIM EASON <i>Jim Eason</i>	DRAWN BY DATE APPROVED 4/21/87 O.D.S.
LEASING MANAGER, PAMELA ROGERS <i>Joseph M. Joyner</i>	CHECKED BY: <i>W</i> BASE MAP: REDUCED FROM, UNIVERSAL TRANSVERSE MERCATOR PROJECTION BY U.S.G.S., ORIGINAL SCALE" 1:250,000 1 INCH = 4 MILES

NOTE: THIS MAP IS NOT TO BE CONSTRUED AS AN OFFICIAL TRACT MAP. A SET OF 1:63,360 SCALE TRACT MAPS ARE AVAILABLE AT THE DEPT. OF NATURAL RESOURCES, DIVISION OF OIL AND GAS, 3601 C. ST., P.O. BOX 107024, ANCHORAGE, ALASKA 99510. PHONE (907) 762-4277 7034



SALE AREA

STATE OF ALASKA

BILL SHEFFIELD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

PO. BOX 7034
ANCHORAGE, ALASKA 99510-7034

November 20, 1986

Phone: 762-4277

NOTICE OF SALE

STATE OF ALASKA COMPETITIVE OIL AND GAS LEASE SALE 51 (PRUDHOE BAY UPLANDS)

The Department of Natural Resources, Division of Oil and Gas (DO&G), gives formal notice under AS. 38.05.945(a)(4) of its intention to offer lands for competitive oil and gas lease. Sale 51 includes 119 tracts with a total area of approximately 592,142 acres. The proposed sale area consists of onshore acreage located on the North Slope of Alaska, lying between the Canning River on the East and the Sagavanirktok River on the West. The entire sale area is within the North Slope Borough. The North Slope communities of Deachorse/Prudhoe Bay, Nuiqsut, Barrow, and Kaktovik may be affected by the sale.

Included in this sale are 46 tracts that are being offered as "exempt" acreage under AS. 38.05.180(d)(1). Tracts 17-19, 44-47, 65-68, and 85-119 have been leased in previous state North Slope Oil and Gas lease Sales: Sale 14 (1965), Sale 31 (1980), and Sale 34 (1982).

Bidding Method

The bidding method for all tracts will be cash bonus bidding with a minimum bid of \$2.00 per acre. All tracts will have a fixed royalty rate of 12.5 %.

Length of Lease

All leases issued as a result of sale 51 will have an initial primary term of 10 years.

Lease Form

All leases issued as a result of sale 51 will be executed on Form DO&G-01-86 (COMPETITIVE OIL AND GAS LEASE) which was revised in November 1986. The revision made in this lease form corrects an Alaska Statute citation in Paragraph 1, section (c) from AS 38.05.365(13) to AS 38.05.965(17).

Rental

Annual rental will be \$1.00 per acre for the first year, \$1.50 per acre for the second year, \$2.00 per acre for the third year, \$2.50 per acre for the fourth year, and \$3.00 per acre for the fifth and following years.

Bids also be accepted from 9:00 a.m. to 4:00 p.m. on January 26, 1987 in Room 1380 (Thirteenth Floor) of the Frontier Building, 3601 "C" Street, Anchorage, Alaska. Bids that are sent by mail must be sent to: Director, DO&G, P.O. Box 7034, Anchorage, Alaska 99510-7034, and must be received by 4:00 p.m., January 26, 1987. Bids that are sent by Federal Express, DHL, or any other delivery service must be received by 4:00 p.m., January 26, 1987, and should be addressed to: Director, DO&G, Room 1380, Frontier Building, 3601 "C" Street, Anchorage, Alaska. The envelope for each bid should be marked "State of Alaska Competitive Oil And Gas Lease Sale 51; not to be opened until 9:00 a.m., January 27, 1987; Tract # _____."

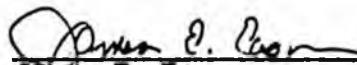
In order to bid at the sale, bidders must pre-qualify no later than 4:30 p.m., January 26, 1987. Potential bidders should consult DO&G for pre-qualification requirements and procedures.

Under 11 AAC 82.445, a bid will not be considered unless supported by the bid deposit and the information required, unless any omission is determined by the Commissioner or his/her designee to be immaterial or due to excusable inadvertence, and the omission is corrected within one week after receipt of a notice of deficiency.

Additional Information

In support of this lease sale, the Director of the Division of Oil and Gas has prepared a written final finding and decision under AS 38.05 035(e) which sets forth the facts and applicable laws upon which he has determined that the proposed action will best serve the interests of the state. The Director's written finding and decision are available at the Division of Oil and Gas, Frontier Building, 3601 "C" Street, Room 1398, in Anchorage or by writing DO&G at P.O. Box 7034, Anchorage, Alaska 99510-7034. Tract maps, Final Legal Descriptions and additional information on the proposed sale are available upon request to bidders and the public at DO&G during regular office hours. The cost for each set of tract maps is \$50.00. Please make checks for these items payable to: Department of Revenue, State of Alaska.

The state reserves the right to delete tracts and to revise tract acreage at any time up to and including the day of the sale.



James E. Eason
Director

STATE OF ALASKA

BILL SHEFFIELD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

PO. BOX 7034
ANCHORAGE, ALASKA 99510-7034

November 20, 1986

Sale 51 Information to Bidders

A. Acceptance and Rejection of Bids

The state hereby expressly reserves the right to reject any bid on any tract. No bid for any tract will be accepted, and no lease for any tract will be awarded to any bidder unless the following conditions have been met:

1. The bidder has complied with this notice and applicable state regulations and statutes.
2. The bid is the highest valid cash bonus bid.
3. The amount of the bid has been determined to be adequate by the Commissioner of Natural Resources.

In addition, no bid containing or accompanied by any condition, qualification or material alteration will be considered.

B. Pre-Qualification of Bidders

In order to submit bids for this sale, bidders must be pre-qualified to bid no later than 4:30 p.m., January 26, 1987. Qualification procedures are as follows:

1. Individuals - An individual bidder must have a Statement of Qualifications on file at DO&G certifying that he or she is at least 18 years old and a citizen of the United States or is eligible for and has filed for citizenship, or is an alien person entitled to a similar lease by virtue of a treaty between the United States and the nation of which the alien person is a citizen. The statement must include the bidder's name, address, and telephone number and must be signed and dated. If an agent is signing the bid form on behalf of an individual, an original or certified copy of a notarized power-of-attorney document evidencing the authority of the agent to act on behalf of the individual must be on file at DO&G. If a guardian, trustee, or legal representative of an individual is signing on behalf of that individual, a certified copy of the court order authorizing him to act in that capacity and to fulfill the individual's obligations arising under any lease issued to the individual must be on file at DO&G. A signed statement as to the citizenship and age of the guardian, trustee, or legal representative of the individual must also be submitted to DO&G.

In order to receive a Certificate of Authority, foreign corporations must submit a packet of completed forms entitled "Instructions for qualifying a foreign corporation to do business in the State of Alaska" to the Department of Commerce and Economic Development, Corporation Section, P.O. Box D, Juneau, Alaska 99811. This form can be obtained by writing or telephoning DO&G, P.O. Box 7034, Anchorage, Alaska, 99510 (907-762-4202). In order to receive a Certificate of Incorporation, domestic corporations must submit Articles of Incorporation to the Department of Commerce and Economic Development. Upon proper application, the Department of Commerce and Economic Development will issue a Certificate of Authority or Certificate of Incorporation. Please allow two to three weeks for the processing of these certificates.

4. Partnerships or Other Unincorporated Associations - A partnership or unincorporated association must submit the following documents to DO&G prior to the lease sale:
 - a. A statement describing the business relationships between members or partners.
 - b. A statement of qualifications for each member stating that each member is at least 18 years of age and a citizen of the United States, or is eligible for and has filed for citizenship, or is an alien person entitled to a similar lease by virtue of a treaty between the United States and the nation of which the alien person is a citizen.
 - c. If an agent is signing the bid form on behalf of the partnership or association, an original or certified copy of a notarized power-of-attorney defining the agent's authority to sign the bid on behalf of the partnership or association.

C. Bid Submission

Bids will be received by the Director of the Division of Oil and Gas or his authorized agent in Room 1380 (Thirteenth Floor) of the Frontier Building, 3601 "C" Street, Anchorage, Alaska, between the hours of 9:00 a.m. and 4:00 p.m. on January 26, 1987. Bids that are mailed to the Director, DO&G, P.O. Box 7034, Anchorage, Alaska 99510-7034 must be received no later than 4:00 p.m. January 26, 1987. Bids will also be received at the Division's temporary office in the Denali I Room at the Clarion Hotel, 4800 Spenard Road, in Anchorage between 8:00 a.m. and 9:00 a.m. on January 27, 1987. No bids will be received after 9:00 a.m., January 27, 1987.

Bids will be received and processed on January 27, 1987 in the following manner:

1. 8:00 a.m.- 9:00 a.m. - bids will be received in the "Denali I Room."
2. 9:00 a.m. - closing of bid submission.
3. 9:00 a.m.- 10:00 a.m. - opening of the bids by DO&G personnel. The opening of bids is for the sole purpose of publicly announcing and recording bids received. No bids will be accepted or rejected at this time.

E. Method of Handling Bid Deposits and Lease Awards

1. Bid deposits will be safeguarded against theft, misappropriation and loss. Receipt of a bid deposit by the state does not constitute and shall not be construed as acceptance of any bid on behalf of the state.
2. A bidder submitting a bid which is not the apparent high bid may pick up the bid deposit from 3:00 p.m. to 4:00 p.m., January 27, 1987, in Room 1398, (Thirteenth Floor) of the Frontier Building, 3601 "C" Street, Anchorage, Alaska. Bid deposits also will be returned from 9:00 a.m. to 3:00 p.m. on January 28, 1987, in Room 1398, (Thirteenth Floor) of the Frontier Building, 3601 "C" Street, Anchorage, Alaska. Bid deposits which have not been retrieved by 3:00 p.m., January 28, 1987 will be returned to the bidder by mail to the address shown on the bid form.
3. A bidder whose bid deposit for an apparent high bid is tendered by cashier's check, treasurer's check, or certified check drawn on a non-Alaska bank must wire transfer funds in the amount of such bid deposit on January 28, 1987, no later than noon Eastern Standard Time (8:00 a.m. Alaska Standard Time), to: First Pennsylvania Bank of Philadelphia, ABA # 031000024, for credit to State of Alaska, Account # 07/089250/00, Attn: Catherine Hess. It is not necessary that separate wire transfers be made if more than one bid deposit is being transferred to the account. Each apparent high bidder making a wire transfer to this account must Telex the following information to the Alaska Department of Revenue, Treasury Division (Telex No. 099-45-333) and the Department of Natural Resources, DO&G (Telex No. 090-25-360): the amount of each bid deposit comprising the wire transfer, the tract number to which each bid deposit applies, the originating bank of the wire transfer, and the name(s) of the bidder's partner(s), if any, on whose behalf a bid deposit is being wire transferred. Upon notification of receipt of a wire transfer, the cashier's check(s), treasurer's check(s) and certified check(s) for the bid deposit(s) corresponding to that wire transfer will be returned from 10:00 a.m. to 3:00 p.m., January 28, 1987 in Room 1380 (Thirteenth Floor) of the Frontier Building, 3601 "C" Street, Anchorage, Alaska.
4. If a bid deposit for an apparent high bid is tendered in cash, by money order, or is a certified, treasurer's, or cashier's check drawn on an Alaska bank, the bidder will not be required to wire transfer federal funds for that bid deposit. Such checks will be presented January 27, 1987, for payment in federal funds at the First National Bank of Anchorage.
5. Upon rejection by the State of Alaska of any apparent high bid, the amount of the bid deposit for that bid will be mailed to the bidder. A bidder who is unable to pick up a bid deposit in the manner described above may submit with the bid written instructions for return of the bid deposit.

MITIGATING MEASURES

AS 38.05.035(e) and the departmental delegation of authority provide the Director, Division of Oil and Gas, with the authority to impose conditions or limitations, in addition to those imposed by statute, to ensure that a resource disposal is in the state's best interests. Stipulations will be enforced throughout the term of the lease. Measures listed under "Plans of Operations and Other Terms of Sale" will be imposed through plans of operations and other permits to mitigate the social and environmental effects of lease activities. These measures were developed after considering stipulations and terms of sale proposed in the Sale 51 preliminary analysis and public and agency comment on them.

Lease Stipulations

1. Spill Prevention Control and Countermeasure Plan: Lessees are required to comply with federal guidelines (40 CFR 112.7; see Appendix 2) for the preparation and implementation of a spill prevention control and countermeasure plan.
2. Discovery of Historic or Archeologic Objects: In the event any site, structure, or object of historic or archeologic significance is discovered during operations on the leased area, the lessee must report immediately such findings to the Director, Division of Oil and Gas, and make every reasonable effort to preserve and protect such site, structure, or object from damage until the Director, Division of Oil and Gas, after consultation with the State Historic Preservation Officer, has given directions as to its preservation.

Plans of Operations and Other Terms of Sale

Lessees must submit a detailed plan of operations to the Division of Oil and Gas for approval before conducting any exploratory or development operations. Plans of operations must identify the specific measures, design criteria, and construction methods and standards that will be employed to meet the restrictions listed below. The lessee shall concurrently submit an informational copy of its plan of operations to the North Slope Borough. For those activities occurring on leases located in the coastal zone, review of plans of operations and other required permits will comply with coastal zone consistency review procedures established under 6 AAC 50. Except as indicated, the restrictions listed below do not apply to geophysical exploration on state lands; geophysical exploration activities are governed by 11 AAC 96. The following restrictions will be imposed on lands leased in this sale as a condition of the approval of plans of operations.

General:

1. Plans of operations for lease activities and specific permit applications which are subject to approval by the U.S. Corps of Engineers; which require a Certificate of Reasonable Assurance from the Department of Environmental Conservation; or which require other state agency authorizations must be submitted simultaneously for state agency review and approval at least 60 days prior to conducting the activities.

Facilities:

7. All permanent facilities, with the exception of approved road and pipeline crossings aligned perpendicular to watercourses, will be prohibited within 500 feet (152 m) of the active floodplain of the Sagavanirktok, Kadleroshilik, Shaviovik, Kavik, Staines, and Canning Rivers. Permanent facilities will be prohibited within 100 feet (30 m) of all other fishbearing streams and lakes unless the Director, Division of Oil and Gas, after consultation with the Department of Fish and Game, determines that such facilities placement will not significantly disturb sensitive wildlife habitats or that such a requirement is not feasible or prudent.
8. Measures will be required to minimize the impact of industrial development on key wetlands that are important to waterfowl and shorebirds. Key wetlands include shallow-Arctophilia (Class III), deep-Arctophilia (Class IV), and basin-complex wetlands (Class VI). Specific measures include the requirements that:
 - a. Lessees must identify on a map or aerial photograph the largest surface area within which it is anticipated that a facility is to be sited, or an activity is to occur. The map or photograph must accompany the plan of operations submitted to the Division of Oil and Gas. The Division of Oil and Gas will consult with the Department of Fish and Game to identify the least environmentally sensitive area(s) within the industry-identified area of interest. The industry-identified surface area must be large enough to contain the facility and to accommodate planned expansion.
 - b. Drill pads, roads, pipelines, and other facilities must be sited outside of key wetlands, unless the Director, Division of Oil and Gas, after consultation with the Department of Fish and Game, determines that there are no feasible or prudent alternatives.
 - c. Where facilities must be sited within key wetlands, such facilities will be sited, designed, constructed, and maintained in a manner that will preserve natural hydrological patterns and prevent oil contamination.
 - d. Draining or dewatering key wetlands is prohibited, unless no feasible or prudent alternative exists.
9. Impermeable lining and diking will be required for sewage ponds and oil storage facilities (with a storage capacity greater than 660 gallons). Buffer zones of not less than 100 feet (30 m) and up to 1,500 feet (457 m) will be required to separate oil storage facilities (with a capacity greater than 660 gallons) and sewage ponds from marine areas, freshwater supplies, streams, lakes, and Class III, IV, and VI wetlands unless the Director, Division of Oil and Gas, after consultation with the Department of Environmental Conservation, determines that such a requirement is not feasible or prudent. Sumps and reserve pits must be rendered impermeable and otherwise fully contained through diking or other means.

archeological, geological, and biological resources. The program must also be designed to increase the sensitivity and understanding of personnel to community values, customs, and lifestyles in areas in which such personnel will be operating. The lessee must also submit for review and approval a continuing technical environmental briefing program for its supervisory and managerial personnel and those of its agents, contractors, and subcontractors.

Access:

18. No restriction of public access to, or use of, the leased area will be permitted as a consequence of oil and gas activities except in the immediate vicinity of drill sites, buildings, and other related structures. Areas where access is to be restricted must be identified in the plan of operations. No lease facilities or operations may be located where they would block public access to or along navigable and public waters as defined in AS 38.05.965(12) and (16). If lease facilities will be located in the vicinity of these public waters, an easement will be reserved under AS 38.05.127 and 11 AAC 53.330 to ensure the right of public access.
19. Surface use will be restricted, as necessary, to prevent unreasonable conflicts with local subsistence harvests.

Third-party Interests:

20. If only the subsurface estate is owned by the state, or if the surface is owned by the state but subject to third party interests, the lessee must not enter upon such land until the lessee makes a good faith effort to agree with the surface interest holder on settlement of damages that may be caused by lease activities. If an agreement cannot be reached, the Director, Division of Oil and Gas, has the authority to approve the activity, provided adequate provisions have been made by the lessee with the state to pay for any damages the surface interest holder may suffer.
21. The activities proposed under a plan of operations must not unreasonably diminish the use and enjoyment of lands within a native allotment. Before entering a pending or approved native allotment, lessees must contact the Bureau of Indian Affairs and the Bureau of Land Management and obtain permission to enter, if required. Lessees must also comply with applicable federal law regarding native allotments.

Archeological and Historical Sites:

22. Prior to the construction or placement of any structure, road, or facility resulting from exploration, development, or production activities, the lessee must conduct an inventory of archeological and historical sites within the area affected by a proposed activity. Such inventory must consider literature provided by the North Slope Borough and local residents, documentation of oral history regarding historic and prehistoric uses of such sites, evidence of consultation with the Alaska Heritage Resources Survey and the National Register of Historic Places, and site surveys. The inventory must also include a detailed analysis of the potential effects estimated to result from the proposed activity. The

Explosives must not be detonated in close proximity to fishbearing waters unless the detonation produces a pressure rise in the waterbody of no more than 3 psi or the waterbody, including its substrate, is solidly frozen. The minimum acceptable offset from fishbearing waters for various size single charge detonations is:

1-2 pound charge -- 80 feet
5 pound charge -- 120 feet
10 pound charge -- 170 feet
25 pound charge -- 270 feet
100 pound charge -- 530 feet.

Disposal of produced water, drilling muds, and cuttings:

24. Solid waste disposal into rivers, streams, natural lakes, and Class III, IV, and VI wetlands is prohibited. Before the lessee disposes of solid waste in other areas, the disposal must be approved through permits issued by Department of Environmental Conservation.
25. All garbage and refuse must be incinerated. Residue and nonburnables must be disposed of at an upland site approved by the Department of Environmental Conservation. No new solid fill disposal sites, except possibly for the disposal of drilling muds and cuttings, will be approved during the exploratory phase.
26. Discharge of produced water, drilling muds, and cuttings:
 - a. Disposal of drilling muds and cuttings is subject to a Department of Environmental Conservation solid waste disposal permit and any guidelines and conditions accompanying the solid waste disposal permit. Disposal of wastewaters generated from drilling operations will be subject to a Department of Environmental Conservation wastewater disposal permit.
 - b. Disposal of produced waters will be by subsurface disposal techniques, except that the Department of Environmental Conservation may permit alternate disposal methods if the department determines that subsurface disposal techniques are not feasible or prudent. Disposal of produced water to estuarine waters at river mouths and freshwater bodies, including Class III, IV, and VI wetlands, is prohibited.
 - c. Discharge of drilling muds and cuttings to lakes, streams, rivers, tidally influenced mouths of rivers, and Class III, IV, and VI wetlands is prohibited. Disposal of muds and cuttings may be made into sumps and reserve pits approved through a solid waste disposal permit from the Department of Environmental Conservation.

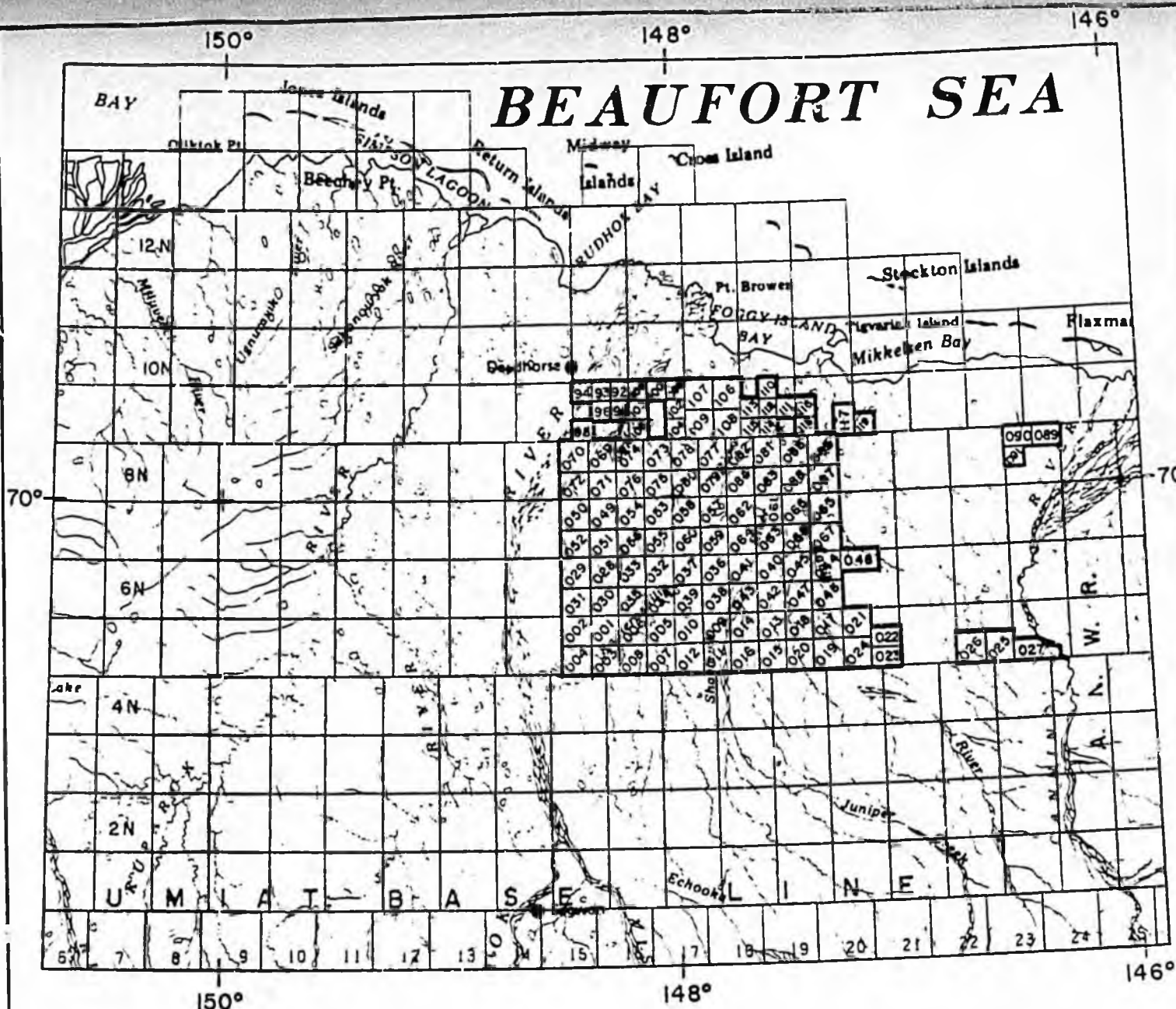
Gravel Mining:

27. In meeting gravel needs for exploration, development, and production, gravel from nearby abandoned drill pads, roads, and airstrips, and existing material sites must be used first unless it is demonstrated to the Director, Division of Land and Water Management, after consultation with the Division of Oil and Gas and the Department of Fish and Game, that

with the U.S. Fish and Wildlife Service. All known nest sites will be considered active between April 15 and June 1. Known nest sites that have not been surveyed will be considered active throughout the summer season. Nest sites not having a peregrine falcon present by June 1 will be considered inactive, and oil and gas activities near inactive nests will not be subject to the restrictions listed under b, c, and d. Activities at existing development sites within two miles of newly established nests will not be subject to these restrictions.

- a. Within one mile (1.6 km) of all nest sites -- Facilities, including but not limited to roads, pipelines, disposal sites, gravel mines, storage facilities, and camps will be prohibited.
 - b. Within one mile (1.6 km) of active nest sites -- Between April 15 and August 31, surface entry will be prohibited and aircraft overflights must avoid nest sites by an altitude of 1500 feet (457 m) above nest level.
 - c. Within two miles (3.2 km) of active nest sites -- Noisy activities, including blasting and gravel washing, will be prohibited between April 15 and August 31. Airfields, construction camps, disposal sites, compressor stations, and other permanent facilities that occupy large areas, which are noisy, or which require sustained human occupancy will be prohibited.
 - d. Within 15 miles (24 km) of active nest sites -- Except for limited non-aerial applications of approved non-persistent insecticides, pesticide use will be prohibited.
32. a. To minimize impacts on caribou, pipelines must be consolidated to the extent feasible and must be designed, sited, and constructed to allow safe passage of caribou. Adequate elevation, ramping, or burial of pipelines will be required in areas identified by the Department of Fish and Game as important caribou movement zones.
- b. Exploratory drilling operations may be restricted or prohibited on Tracts 89, 90, and 91 and on other tracts as necessary during the caribou calving period, generally May 15 through June 20. Development and production activities, with the exception of drilling, maintenance, and operation of production wells, may be restricted or prohibited on these tracts during the calving period, except that such activities will be allowed year-round in any core area of intense industrial activity. In order to assist the assist the Director, Division of Oil and Gas, in determining the necessity for restrictions, the lessee may be required to conduct caribou monitoring studies in consultation with the Department of Fish and Game.

BEAUFORT SEA



STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL & GAS

OIL AND GAS LEASE SALE 51 PRUDHOE BAY UPLANDS TRACT MAP

SCALE 1:1,000,000 1 inch = 16 Miles
0 10 20 30 40 50 Miles

ACTING DIRECTOR, DBOG JIM EASON <i>Jim Eason</i>	DRAWN BY O.D.S.
LEASING MANAGER PAMELA ROGERS <i>Pamela Rogers</i>	CHECKED BY M.

DATE APPROVED 8/18/86
BASE MAP: COPYRIGHT ARCTIC ENVIRONMENTAL INFORMATION DATA CENTER, 1979. ALL RIGHTS RESERVED. THIS MAP IS A REPRODUCTION IN WHOLE OR IN PART IN ANY FORM.
 UNIVERSAL TRANSVERSE MERCATOR PROJECTION ON SIX DEGREE BANDS.

SALE AREA



NOTE: THIS MAP IS NOT TO BE CONSTRUED AS AN OFFICIAL TRACT MAP. A SET OF 1:63,360 SCALE TRACT MAPS ARE AVAILABLE AT THE DEPT. OF NATURAL RESOURCES, DIVISION OF OIL AND GAS, 3401 C. ST., P.O. BOX 7034, ANCHORAGE, ALASKA 99510-7034 PHONE (907)561-2020

STATE OF ALASKA

STEVE COWPER, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

PO. BOX 7034
ANCHORAGE, ALASKA 99510-7034

August 13, 1987

Phone: 762-2586

-NOTICE-
OF

FINAL FINDING AND DECISION UNDER AS 38.05.035(e)
REGARDING PROPOSED OIL AND GAS LEASE SALE 54 (KUPARUK UPLANDS)

The Department of Natural Resources, Division of Oil and Gas (DO&G), gives formal notice under AS 38.05.945(a)(3) of its intention to make a final finding and decision under AS 38.05.035(e) regarding the sale of oil and gas leases in proposed Oil and Gas Lease Sale 54 (Kuparuk Uplands). Before this sale may be held, the Director of the Division of Oil and Gas must make a written final decision that the sale serves the best interests of the state. This decision will set out the facts and applicable policies upon which the director bases his determination that the sale of oil and gas leases in proposed Sale 54 will or will not best serve the interests of the state. This final decision is expected to be available to the public in October 1987.

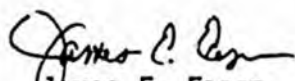
Proposed Oil and Gas Lease Sale 54 includes 108 tracts with a total area of approximately 507,979 acres. The proposed sale area consists of onshore acreage lying between the National Petroleum Reserve Alaska (NPR) boundary and the area of state Kuparuk Uplands Sale 48. The entire sale area is within the North Slope Borough. The North Slope communities of Deadhorse/Prudhoe Bay, Nuiqsut, Barrow, and Kaktovik may be affected by the proposed sale.

Proposed Sale 54 includes approximately 53,186 acres of Colville River delta lands, which were previously contained in proposed exempt Oil and Gas Lease Sale 52A. In June 1986, Sale 52A was postponed from its original September 1986 sale date. The acreage within that sale area was combined with the lands proposed to be offered through Sale 54. This additional acreage consists of (1) approximately 30,481 acres of state selected lands that are Tentatively Approved (TA) by the federal government for conveyance to the State of Alaska, and (2) an additional 22,705 acres that are subject to a 1974 agreement between the Arctic Slope Regional Corporation (ASRC) and the State of Alaska. In 1974, ASRC and the state agreed that ASRC would exchange these lands and others in the area for approximately 65,000 acres of state owned land in the Point Lay area. The department has sought to implement the agreement. ASRC, however, no longer recognizes the validity of the agreement, and has brought suit against the department to nullify the agreement and prevent the subject lands from being leased by the state for oil and gas exploration and development. The inclusion of these lands in Sale 54, comprised of Tracts 91, 93, 94, 99, 100 and 102, is conditional based upon an acceptable settlement in this case.

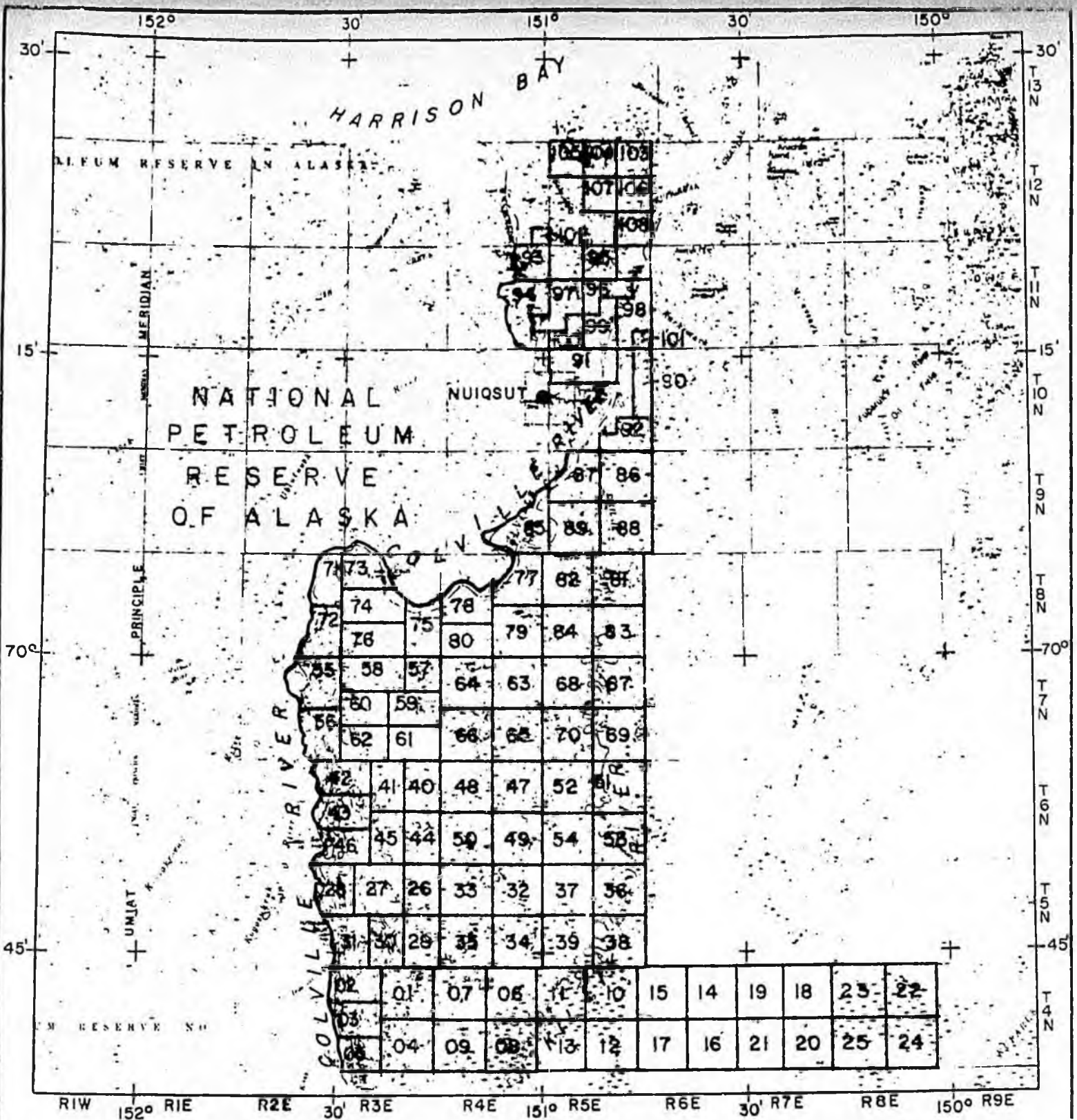
The tracts added to Sale 54 from Sale 52A are being offered as "exempt" acreage under the terms of AS 38.05.180(d), which allows the Commissioner of the Department of Natural Resources to issue oil and gas leases in an area that has not been included in the state's five-year leasing program, if the land to be leased (1) was previously subject to a valid state or federal oil

Comments should be mailed to DO&G, P.O. Box 107034, Anchorage, Alaska 99510-7034, Attention: Pam Rogers. Comments should be received at DO&G by September 18, 1987 in order to be considered in the final decision of whether or not this sale is to be held. The final ACMP consistency determination will be included in the Final Finding and Decision of the Director. Preliminary legal descriptions for Sale 54 are available upon request to potential bidders and the public at DO&G. Preliminary Tract Maps are also available at a cost of \$50 per set.

If a decision is made that the proposed sale best serves the interest of the state, an "Information to Bidders" packet will be made available in October 1987. If a decision is made to hold the sale, it is tentatively scheduled to occur at the William A. Egan Civic and Convention Center, 555 West Fifth Avenue, in Anchorage, on January 26, 1988 in accordance with AS 38.05.180.


James E. Eason
Director

0852b



STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL & GAS

PROPOSED OIL AND GAS LEASE SALE 54
KUPARUK UPLANDS PRELIMINARY TRACT MAP

SCALE 1:500,000 ONE INCH EQUALS EIGHT MILES
MILES 6 5 4 3 2 1 0 6 12 18 MILES

DIRECTOR, DIV. OF OIL & GAS JIM EASON <i>[Signature]</i>	DRAWN BY O.D.S.
LEASING MANAGER PAMELA ROGERS <i>[Signature]</i>	CHECKED BY <i>[Signature]</i>
DATE APPROVED 8/4/87 BASE MAP: Reduced From U.T.M. Projection By USGS Original Scale: 250,000 Portions Of Harrison Bay, Beechey Pt., Umiat, & Sag. River	

NOTE: NO DECISION HAS YET BEEN MADE ON WHETHER THE STATE WILL HOLD THIS LEASE SALE. THE STATE IS GATHERING SOCIAL, ENVIRONMENTAL & ECONOMIC INFORMATION ON WHICH TO BASE A DECISION.

NOTE: THIS MAP IS NOT TO BE CONSTRUED AS AN OFFICIAL TRACT MAP. A SET OF 1:63,360 SCALE (1"=1 MILE) TRACT MAPS ARE AVAILABLE AT THE DEPT. OF NATURAL RESOURCES, DIV. OF OIL AND GAS, 3601 C. ST., P.O. BOX 107034, ANCH. AK 99510-7034 PHONE 561-2020

PROPOSED SALE AREA



PROPOSED MITIGATING MEASURES FOR SALE 54

AS 38.05.035(e) and the departmental delegation of authority provide the Director, Division of Oil and Gas, with the authority to impose conditions or limitations, in addition to those imposed by statute, to ensure that a resource disposal is in the state's best interests. If adopted, stipulations will be enforced throughout the term of the lease and measures listed under "Proposed Permit Terms" will be imposed through plans of operations and other permits to mitigate the social and environmental effects of lease activities. These proposed measures were developed after considering stipulations and terms of sale imposed in other North Slope sales; fish and wildlife resource and harvest data submitted by the Alaska Department of Fish and Game; environmental data relating to air and water quality, solid waste disposal, and oil spills submitted by the Alaska Department of Environmental Conservation; and comments submitted by the public, the North Slope Borough, and other federal, state, and local agencies.

Proposed Lease Stipulations

1. Spill Prevention Control and Countermeasure Plan: Lessees are required to comply with federal guidelines (40 CFR 112.7) for the preparation and implementation of a spill prevention control and countermeasure (SPCC) plan. In addition to addressing the prevention, detection, and cleanup of oil, the SPCC plan for drilling operations should include, but not be limited to, methods for controlling blowouts, location of spill cleanup equipment, identification and location of a suitable alternative drilling rig, and the time required to obtain equipment, mobilize, rig-up, and commence drilling of a relief well, if needed.
2. Discovery of Historic or Archeologic Objects: In the event any site, structure, or object of historic or archeologic significance is discovered during operations on the leased area, the lessee must report immediately such findings to the Director, Division of Oil and Gas, and make every reasonable effort to preserve and protect such site, structure, or object from damage until the Director, Division of Oil and Gas, after consultation with the State Historic Preservation Officer, has given directions as to its preservation.

Plans of Operations and Other Proposed Terms of Sale

Lessees must submit a detailed plan of operations to the Division of Oil and Gas for approval before conducting any exploratory or development operations. Plans of operations must identify the specific measures, design criteria, and construction methods and standards that will be employed to meet the restrictions listed below. The lessee shall concurrently submit an informational copy of its plan of operations to the North Slope Borough. For those activities occurring on leases located in the coastal zone, review of plans of operations and other required permits will comply with coastal zone consistency review procedures established under 6 AAC 50. Except as indicated, the restrictions listed below do not apply to geophysical exploration on state lands; geophysical exploration activities are governed by 11 AAC 96. The following restrictions will be imposed on lands leased in this sale as a condition of the approval of plans of operations.

General:

1. Plans of operations for lease activities and specific permit applications which are subject to approval by the U.S. Corps of Engineers; which require a Certificate of Reasonable Assurance from the Alaska Department of Environmental Conservation; or which require other state agency authorizations must be submitted simultaneously for state agency review and approval at least 60 days prior to conducting the activities.
2. Bidders are advised that the North Slope Borough (NSB) Assembly has adopted a comprehensive plan and land management regulations under AS 29. The regulations require NSB approval for certain activities necessary for exploration and development of the lease. The state may not in all instances accept this assertion of jurisdiction.
3. All lease-related activities in the coastal zone are subject to the standards of the Alaska Coastal Management Program (ACMP) (6 AAC 80) and to the provisions of all approved coastal management plans. The Division of Oil and Gas will require, as a condition for consistency approval of lease operations, such modification or stipulations as may be necessary to ensure consistency with the Alaska Coastal Management Program, and with sound planning and management of coastal zone resources.
4. Except for approved off-road travel, exploration activities must be supported only by ice roads, winter trails, existing road systems, or air service. Wintertime off-road travel across tundra and wetlands may be approved in areas where snow and frost depth are sufficient to protect the ground surface. Summertime off-road travel across tundra and wetlands may be approved subject to time periods and vehicle types approved by the Division of Land and Water Management. Exceptions may be granted by the Director, Division of Land and Water Management, and the Director, Division of Oil and Gas, if an emergency condition exists or if it is determined, in consultation with the Alaska Department of Fish and Game, that travel can be accomplished without damaging vegetation or the ground surface.
5. An application for water rights must be submitted to the Alaska Department of Natural Resources prior to diverting, impounding, or withdrawing water from any ground or surface source. The lessee will be responsible for ensuring that an adequate supply of water is available for winter use through development of such means as storage reservoirs and snow melting. A permit must also be obtained from the Alaska Department of Fish and Game prior to using, diverting, obstructing, polluting, or changing the natural flow or bed of a designated anadromous waterbody (AS 16.05.870) or obstructing fish passage (AS 16.05.840).
6. The following provisions will govern aircraft operations in and near the sale area:
 - a. From May 15 through September 30, aircraft must fly at altitudes greater than 1,500 feet (457 m) or at a lateral distance of one mile around barrier islands, lagoon areas, river deltas, and wetlands within one mile of the Beaufort Sea coast (excluding take-offs and landings).

- b. From May 15 to June 20, aircraft flying within 30 miles of the coast between the Colville and Sagavanirktok Rivers must avoid caribou by an altitude of 1,500 feet (457 m) or a lateral distance of one mile (excluding take-offs and landings).
- c. Human safety will take precedence over flight restrictions.

Facilities:

- 7. All permanent facilities, with the exception of approved road and pipeline crossings aligned perpendicular to watercourses, will be prohibited within 500 feet (152 m) of the active channel of the Colville and Itkillik Rivers. Permanent facilities will be prohibited within 100 feet (30 m) of all other fishbearing streams and lakes unless the Director, Division of Oil and Gas, after consultation with the Alaska Department of Fish and Game, determines that such facilities placement will not significantly disturb sensitive wildlife habitats or that such a requirement is not feasible or prudent.
- 8. Measures will be required to minimize the impact of industrial development on key wetlands that are important to waterfowl and shorebirds. Key wetlands include shallow-Arctophilia (Class III), deep-Arctophilia (Class IV), basin-complex wetlands (Class VI), and coastal wetlands (Class VIII). Specific measures include the requirements that:
 - a. Lessees must identify on a map or aerial photograph the largest surface area within which it is anticipated that a facility is to be sited, or an activity is to occur. The map or photograph must accompany the plan of operations submitted to the Division of Oil and Gas. The Division of Oil and Gas will consult with the Alaska Department of Fish and Game to identify the least environmentally sensitive area(s) within the industry-identified area of interest. The industry-identified surface area must be large enough to contain the facility and to accommodate planned expansion.
 - b. Drill pads, roads, pipelines, and other facilities must be sited outside of key wetlands, unless the Director, Division of Oil and Gas, after consultation with the Alaska Department of Fish and Game, determines that there are no feasible or prudent alternatives.
 - c. Where facilities must be sited within key wetlands, such facilities will be sited, designed, constructed, and maintained in a manner that will preserve natural hydrological patterns and prevent oil contamination.
 - d. Draining or dewatering key wetlands is prohibited, unless no feasible or prudent alternative exists.
- 9. Impermeable lining and diking will be required for sewage ponds and oil storage facilities with a storage capacity greater than 660 gallons. Buffer zones of not less than 100 feet (30 m) and up to 1,500 feet (457 m) will be required to separate oil storage facilities (with a capacity greater than 660 gallons) and sewage ponds from marine areas, freshwater supplies, streams, lakes, and Class III, IV, VI and VIII wetlands unless the Director, Division of Oil and Gas, after consultation with the Alaska

Department of Environmental Conservation, determines that such a requirement is not feasible or prudent. Sumps and reserve pits must be rendered impermeable and otherwise fully contained through diking or other means.

10. To the extent feasible and prudent, all lease activities will be conducted and all structures will be designed, sited, and constructed to maintain normal water flow and drainage patterns and to allow free movement and safe passage of fish and mammals.
11. Facilities and surface transportation routes will, to the extent feasible and prudent, be sited and consolidated to avoid sensitive fish and wildlife habitat.
12. Exploration facilities, with the exception of drill pads, must be temporary and must not be constructed of gravel. Reuse of existing abandoned gravel structures may be permitted on a case-by-case basis by the Director, Division of Oil and Gas, after consultation with the Director of the Division of Land and Water Management and the Alaska Department of Fish and Game. Approval for use of abandoned structures will depend on the extent and method of restoration needed to return these structures to a usable condition.
13. Pipelines must be located so as to facilitate the containment and cleanup of spilled hydrocarbons. Where feasible and prudent, pipelines must be located on the upslope side of roadways and construction pads unless the Director, Division of Land and Water Management, determines that an alternative site is environmentally acceptable.
14. Except for those on approved exploratory drill sites, stationary fuel storage facilities must not be placed, nor vehicle refueling occur, within active floodplains. Exceptions may be allowed for the refueling of slow-moving construction equipment.
15. Upon abandonment of drilling sites, roads, buildings, airstrips or other facilities, such facilities must be removed and the site rehabilitated, unless the Director, Division of Oil and Gas, after consultation with the Alaska Departments of Fish and Game and Environmental Conservation, determines that such removal and rehabilitation is not in the state's best interests.

Local Hire:

16. The lessee is encouraged to hire and employ local and Alaska residents and companies, to the extent they are available and qualified, for work performed on the leased area.

Environmental Training:

17. The lessee must include in any exploration or development plan a proposed environmental training program for all personnel involved in exploration or development activities (including personnel of the lessee's contractors and subcontractors) for review and approval by the Director, Division of Oil and Gas. The program must be designed to inform each person working on the project of specific types of environmental, social, and cultural

concerns which relate to the individual's job. The program must be formulated and implemented by qualified instructors experienced in each pertinent field of study and must employ effective methods to ensure that personnel understand and use techniques necessary to preserve archeological, geological, and biological resources. The program must also be designed to increase the sensitivity and understanding of personnel to community values, customs, and lifestyles in areas in which such personnel will be operating. The lessee must also submit for review and approval a continuing technical environmental briefing program for its supervisory and managerial personnel and those of its agents, contractors, and subcontractors.

Access:

18. No restriction of public access to, or use of, the leased area will be permitted as a consequence of oil and gas activities except in the immediate vicinity of drill sites, buildings, and other related structures. Areas where access is to be restricted must be identified in the plan of operations. No lease facilities or operations may be located where they would block public access to or along navigable and public waters as defined in AS 38.05.965(12) and (16). If lease facilities will be located in the vicinity of these public waters, an easement will be reserved under AS 38.05.127 and 11 AAC 53.330 to ensure the right of public access.
19. Surface use will be restricted, as necessary, to prevent unreasonable conflicts with local subsistence harvests.

Third-party Interests:

20. If only the subsurface estate is owned by the state, or if the surface is owned by the state but subject to third party interests, the lessee must not enter upon such land until the lessee makes a good faith effort to agree with the surface interest holder on settlement of damages that may be caused by lease activities. If an agreement cannot be reached, the Director, Division of Oil and Gas, has the authority to approve the activity, provided adequate provisions have been made by the lessee with the state to pay for any damages the surface interest holder may suffer.
21. The activities proposed under a plan of operations must not unreasonably diminish the use and enjoyment of lands within a native allotment. Before entering a pending or approved native allotment, lessees must contact the Bureau of Indian Affairs and the Bureau of Land Management and obtain permission to enter, if required. Lessees must also comply with applicable federal law regarding native allotments.

Archeological and Historical Sites:

22. Prior to the construction or placement of any structure, road, or facility resulting from exploration, development, or production activities, the lessee must conduct an inventory of archeological and historical sites within the area affected by a proposed activity. Such inventory must consider literature provided by the North Slope Borough and local residents, documentation of oral history regarding historic and prehistoric uses of such sites, evidence of consultation with the Alaska

Heritage Resources Survey and the National Register of Historic Places, and site surveys. The inventory must also include a detailed analysis of the potential effects estimated to result from the proposed activity. The inventory must be submitted to the Director, Division of Oil and Gas, for distribution to the Director of the Division of Parks and Outdoor Recreation and the Mayor of North Slope Borough for purposes of review and comment. In the event that an archeological or historical site or area may be adversely affected by an activity, the Director, Division of Oil and Gas, after consultation with the Director of the Division of Parks and Outdoor Recreation and the North Slope Borough, will direct the lessee as to what course of action will be necessary to mitigate the adverse effect.

Fishbearing Streams:

23. The measures listed below will be imposed by the Alaska Department of Fish and Game under AS 16 to protect anadromous streams. Similar provisions will be imposed by the Alaska Department of Natural Resources to protect nonanadromous fishbearing streams. Exceptions to these requirements may be allowed on a case-by-case basis by the agency having jurisdiction. Lessees are advised that the Colville and Itkilik Rivers are documented anadromous streams. Specific information on the location of anadromous waterbodies in and near the sale area may be obtained from the Alaska Department of Fish and Game.
- a. Alteration of river banks will be prohibited.
 - b. Except for approved stream crossings, equipment must not be operated within willow stands (Salix spp.).
 - c. The operation of equipment, excluding boats, in open water areas of rivers and streams will be prohibited.
 - d. Bridges must be used as watercourse crossings whenever feasible. Culverts may be used only when bridges are shown not to be feasible or prudent. If approved, culverts must be installed so as not to block fish passage. The siting, design, and construction of both bridges and culverts must be approved prior to the placement of either of these structures.
 - e. Removal of freshwater or snow cover from fishbearing rivers, streams, and natural lakes will be prohibited from freeze-up until spring break-up unless approved by the Division of Land and Water Management and the agency having jurisdiction. Compaction of snow cover overlying fishbearing waterbodies will be prohibited except for approved perpendicular crossings. If ice thickness is not sufficient to facilitate a crossing, ice and/or snow bridges will be required.
 - f. Water intake pipes used to remove water from fishbearing rivers and lakes must be surrounded by a screened enclosure to prevent fish entrainment and impingement. Pipes and screening must be designed and constructed so that the maximum water velocity at the surface of the screen enclosure is no greater than 0.1 foot per second. Screen mesh size shall not exceed 0.04 inch.

- g. To protect fish and other aquatic fauna, geophysical surveys in freshwater will require the use of nonexplosive energy sources. Explosives must not be detonated in close proximity to fishbearing waters unless the detonation produces a pressure rise in the waterbody of no more than 3 psi or the waterbody, including its substrate, is solidly frozen. The minimum acceptable offset from fishbearing waters for various size single charge detonations is:

1-2 pound charge -- 80 feet
5 pound charge -- 120 feet
10 pound charge -- 170 feet
25 pound charge -- 270 feet
100 pound charge -- 530 feet.

Disposal of produced water, drilling muds, and cuttings:

24. Excluding muds and cuttings (see Term 26), solid waste disposal into rivers, streams, natural lakes, and Class III, IV, VI, and VIII wetlands is prohibited. Before the lessee disposes of solid waste in other areas, the disposal must be approved through permits issued by the Alaska Department of Environmental Conservation.
25. All garbage and refuse must be incinerated. Residue and nonburnables must be disposed of at an upland site approved by the Alaska Department of Environmental Conservation. No new solid fill disposal sites, except possibly for the disposal of drilling muds and cuttings, will be approved during the exploratory phase.
26. Discharge of produced water, drilling muds, and cuttings:
- a. Disposal of drilling muds and cuttings is subject to an Alaska Department of Environmental Conservation solid waste disposal permit and any guidelines and conditions accompanying the solid waste disposal permit. Disposal of wastewaters generated from drilling operations will be subject to an Alaska Department of Environmental Conservation wastewater disposal permit.
 - b. Disposal of produced waters will be by subsurface disposal techniques, except that the Alaska Department of Environmental Conservation may permit alternate disposal methods if the department determines that subsurface disposal techniques are not feasible or prudent. Disposal of produced water to intertidal habitat, estuarine waters at river mouths, and freshwater bodies, including Class III, IV, VI, and VIII wetlands, is prohibited.
 - c. Discharge of drilling muds and cuttings to lakes, streams, rivers, intertidal habitat, tidally influenced mouths of rivers, and Class III, IV, VI, and VIII wetlands is prohibited. Disposal of muds and cuttings may be made into sumps and reserve pits approved through a solid waste disposal permit from the Alaska Department of Environmental Conservation.

Gravel Mining:

27. In meeting gravel needs for exploration, development, and production, gravel from nearby abandoned drill pads, roads, and airstrips, and existing material sites must be used first unless it is demonstrated to the Director, Division of Land and Water Management, after consultation with the Division of Oil and Gas and the Alaska Department of Fish and Game, that use of these sources is not feasible or prudent or in the state's best interests. The Alaska Oil and Gas Conservation Commission will be consulted when gravel is to be removed from a wellhead.
28. Gravel mining sites required for exploration activities must not be located within an active floodplain of watercourses, unless the Director, Division of Land and Water Management, after consultation with the Alaska Department of Fish and Game, determines that no feasible and prudent alternative exists and that a floodplain source will cause the least adverse environmental impact. Mining site development and rehabilitation within floodplains must follow the procedures outlined in Gravel Removal Guidelines Manual For Arctic and Subarctic Floodplains, 1980, U.S. Fish and Wildlife Service, Woodward Clyde Consultants. Alaska Department of Fish and Game approval is required if the mining site is located within an anadromous stream (AS 16.05.870) or could block fish passage (AS 16.05.840).
29. Gravel mining sites required for development activities will be restricted to the minimum number of upland sites needed to develop the field efficiently and with minimal environmental damage. Where feasible and when large quantities of water will be needed for domestic or industrial use, upland gravel sites must be designed and constructed to function as reservoirs for future use. Gravel mining will not be allowed from active floodplains during development and production, unless the Director, Division of Land and Water Management, after consultation with the Alaska Department of Fish and Game, determines that there is no other feasible and prudent alternative and, if applicable, AS 16 requirements are met.

Special Areas:

30. Prior to initiating any field activities which could impact denning polar bears, lessees must consult with the appropriate state and federal agencies to acquire the most recent information on possible locations of den sites and the location of any radio-tagged bears. Winter travel routes and exploration activities must avoid preferred polar bear denning habitat unless human safety dictates otherwise. Onshore, polar bears den within 25 miles (40 km) of the coastline in deeply drifted areas (6 ft. or greater) adjacent to the cutbanks of drainages. The use of explosives will be prohibited within 1/4 mile (0.4 km) of cutbanks identified by the Alaska Department of Fish and Game. Exploration activities within one mile (1.6 km) of documented, active polar bear dens may be restricted or prohibited during plan of operations approval. If the lessee encounters polar bear dens in the field, the lessee must immediately report the den(s) to the Director, Division of Oil and Gas, and subsequently avoid the den(s).

31. Peregrine falcon nesting sites are known to occur near the Sale 54 area and may occur within the Sale 54 area. Lessees are advised that disturbing a peregrine falcon nest violates federal law. If the lessee discovers active peregrine falcon nest sites, the lessee must immediately report the nest locations to the Director, Division of Oil and Gas. To comply with state and federal endangered species acts, the following restrictions will apply in the vicinity of peregrine falcon nests sites, except as approved by the Alaska Department of Natural Resources in consultation with the Alaska Department of Fish and Game and the U.S. Fish and Wildlife Service. All known nest sites will be considered active between April 15 and June 1. Known nest sites that have not been surveyed will be considered active throughout the summer season. Nest sites not having a peregrine falcon present by June 1 will be considered inactive, and oil and gas activities near inactive nests will not be subject to the restrictions listed under b, c, and d. Activities at existing development sites within two miles (3.2 km) of newly established nests will not be subject to these restrictions.
- a. Within one mile (1.6 km) of all nest sites -- Facilities, including but not limited to roads, pipelines, disposal sites, gravel mines, storage facilities, and camps will be prohibited.
 - b. Within one mile (1.6 km) of active nest sites -- Between April 15 and August 31, surface entry will be prohibited and aircraft overflights must avoid nest sites by an altitude of 1500 feet (457 m) above nest level. Human safety will take precedence over flight restrictions.
 - c. Within two miles (3.2 km) of active nest sites -- Noisy activities, including blasting and gravel washing, will be prohibited between April 15 and August 31. Airfields, construction camps, disposal sites, compressor stations, and other permanent facilities that occupy large areas, which are noisy, or which require sustained human occupancy will be prohibited.
 - d. Within 15 miles (24 km) of active nest sites -- Except for limited non-aerial applications of approved non-persistent insecticides, pesticide use will be prohibited.
32. To minimize impacts on caribou, pipelines must be consolidated to the extent feasible and must be designed, sited, and constructed to allow safe passage of caribou. These measures may include elevation or burial of pipelines, ramping, separation of roads and pipelines, traffic control, and siting of facilities away from important caribou movement zones.
33. All Sale 54 acreage in the Colville River Delta (Tracts 95, 96, 99, 100, and 102 to 108 and portions of Tracts 91, 93, 94, 97, and 98) will be subject to the following terms and conditions designed to maintain the production and harvest of key fish and wildlife species in the delta. When considering modifications to these terms and conditions, the Director of the Division of Oil and Gas will consult with and give due deference to comments and recommendations received from the Alaska Department of Fish and Game, the Alaska Department of Environmental Conservation, and the Division of Land and Water Management. When considering a request for a waiver or modification of these terms, environmental values and wildlife harvest will be given great weight and will take precedence unless there is a significant public need for the proposed use or activity; there is no feasible or prudent alternative to meet the public need for the proposed

use or activity which would conform to Sale 54 terms and conditions; and all feasible and prudent steps to maximize conformance with Sale 54 terms and conditions have been taken.

- a. All onshore exploration activities will be restricted to the period between October 1 through April 30 unless the director determines that an extension can be granted to May 15.
- b. During development and production, all major construction activities including, but not limited to, facility, road and pad construction, gravel washing and blasting, will be restricted to the period between October 1 through April 30 unless the director determines that summer construction will cause the least adverse environmental impact.
- c. The surface movement of equipment and personnel may be restricted from May 15 to October 1. All authorized surface movement of equipment and personnel during this period must be on established roads and must be consolidated and scheduled to minimize disturbance to waterfowl. The necessity and conditions for limiting equipment and personnel movement will be identified on a case-by-case basis during review of plans of operations.
- d. Material extraction on the delta will be prohibited unless the director determines that material extraction from the delta will cause the least adverse environmental impact.
- e. Facilities and activities within the Colville River Delta to support industrial operations located outside the delta will be prohibited unless the director determines that the siting of facilities and activities in the delta will cause the least adverse environmental impact.
- f. Permanent facilities will be prohibited within black brant colonies and the traditional black brant brood rearing area unless the director determines the siting of permanent facilities in these areas will cause the least adverse environmental impact.
- g. To provide additional swan protection, drill pads, roads and other facilities must be sited outside of Class III wetlands.
- h. To provide additional protection to yellow-billed loons, permanent facilities will be prohibited in the immediate vicinity of large, clear lakes located in the delta unless the director determines that such placement will cause the least adverse environmental impact.

ANWAR-

GENERAL

MEMORANDUM

DEPARTMENT OF LAND RESOURCES - Division of Land and Water Management

State of Alaska

Ken

TO: Esther C. Wunnicke
Commissioner

DATE December 11, 1985

FILE NO 9105

TELEPHONE NO 762-4346

FROM: Gary Gustafson, Chief
Land Management

SUBJECT Chappell Story

Overview

X
As you know, Ronnie Chappell, Kenai-area reporter for the Daily-News, will soon assert in his newspaper that the state allowed Cook Inlet Region, Inc. (CIRI) to receive title to valuable state and federal land near Kenai, including areas within and adjacent to producing gas fields, as a result of various implementation aspects of the 1976 Cook Inlet Land Trade. He will also maintain that these conveyances occurred even though the state and CIRI previously assured the legislature that the trade would not reduce the state's oil and gas royalty revenue and that these land transfers were unnecessary under the terms of the trade. The complexity of the subject and the seriousness of his allegations will likely result in the Daily-News running the story as a prominent daily sequence over the course of a week during late December (probably beginning around December 20th).

I have been visited by Mr. Chappell five or six times over the last month and have had several additional phone conversations with him. Mr. Chappell has been working on this story almost full time the past month and has interviewed numerous affected persons, including Bob LeResche, Guy Martin, Michael C. T. Smith, Chip Dennerlein, Tom [unclear], Roy Huhndorf, George Kriste and Bill Van Dyke.

As I understand the situation, all related decisions occurred during 1978-1980 under the tenure of prior state administrations. Nonetheless, I believe the public and legislature will still look to the department for a prompt explanation, as well as assurances that the situation could not happen again.

Therefore, in order to facilitate a consistent departmental understanding of this rather complex matter, I have assembled a summary of the pertinent aspects of the Cook Inlet Land Trade which I believe will be tied to the substance of the Chappell story. In addition, I conclude with suggestions for dealing with the situation, including steps to insure that this type of occurrence will not be repeated.

At the onset, it needs to be recognized that CIRI obtained some of its subsurface interests in the Kenai area entirely independent of any state action or interface. By virtue of Section 11(a)(2) of ANCSA, the Village of Salamatof was able to obtain title to the surface estate to certain state land, with CIRI obtaining the subsurface estate. In addition, CIRI also received land within the old Kenai National Moose Range as a result of direct federal conveyances required by the Cook Inlet Land Trade.

The state and federal subsurface conveyances to CIRI, soon to be referenced by Chappell, occurred in accord with three separate implementation aspects of the 1976 Cook Inlet Land Trade. First, approximately 72,000 acres of state land were nominated for transfer to CIRI in 1978 as part of the state's conveyance obligation from the Kenai Pool. This conveyance included numerous state oil and gas leases near Kenai, including one producing lease (ADL 22330). Second, a May 7, 1979 Memorandum of Understanding provided that the state convey CIRI specific subsurface lands near Kenai in the Cannery Loop unit. Third, several 1979 and 1980 nominations to CIRI's in-region selection pool resulted in CIRI's receipt of federal subsurface lands within and adjacent to the Kenai unit. The significance of receiving title to land adjacent to a producing unit is discussed later in the section of this memorandum dealing with ANCSA Section 14(g).

Terms and Conditions

The August 31, 1976 Cook Inlet Land Trade, formally entitled "Terms and Conditions for Land Consolidation and Management in the Cook Inlet Area" (Terms and Conditions), provided a mechanism for CIRI to obtain land otherwise unavailable in region due to prior competing land claims and conveyances (mostly state). The document was signed by the Secretary of Interior, CIRI and the state, ratified by the Alaska State Legislature, and served to settle litigation between CIRI and the U.S.

Among other things, the Terms and Conditions provided that CIRI would receive title to some 475,000 acres of state land from within several land pools (Kenai, Kashwitna, Knik-Willow, Chickaloon, Pt. McKenzie and Beluga). In addition, an in-region land pool was established for CIRI to receive future federal property dispositions, subject to state review and concurrence.

Mike Smith, then Deputy Commissioner of the department (and defacto Director of the Division of Lands) was the state's principal Terms and Conditions negotiator. Other department employees played minor support roles. When Smith left state employment in the spring of 1979, the department no longer had the benefit of a direct historical perspective for implementation purposes and instead became reliant upon second-hand opinions and a somewhat disorganized and incomplete historical file. CIRI, on the other hand, still employs many of the original players and also maintains a very accurate and complete historical file and land record system.

My research into our records shows that the state and CIRI took pains in 1976 to explain to the legislature that CIRI would not receive any producing oil and gas lands from the state, nor would state royalty receipts be affected adversely by the trade. I have copies of testimony by both Mike Smith and Roy Huhndorf (President, CIRI) in which they assured various legislative committees that the state would not convey to CIRI any producing oil or gas lands as part of the trade. In addition, my recent discussions with Mike Smith have confirmed that it was the state's intent at the time to retain all oil and gas land with potential or known value.

Kenai Pool

The Kenai Pool state conveyance obligation to CIRI is specifically outlined in Appendix C (I.A.5.) of the Terms and Conditions. It requires the state to convey 115,200 acres on the Kenai Peninsula to the U.S. (for reconveyance to CIRI). The specific location of this acreage is to be determined to the maximum extent possible by mutual agreement. If CIRI and the state can not agree on all land, there is established a mechanism by which the state will identify an array of state land equal to 1.5 times the amount in disagreement, from which CIRI will choose its remaining entitlement. As best as I can determine, there has been no subsequent disagreement over lands among the parties. Therefore, state conveyances to the U.S. have proceeded unabated with only about 3,750 acres from the Kenai Pool remaining to be conveyed. Incidentally, the Terms and Conditions specifically required in Appendix C that the state convey all land title and interests, including minerals, to the U.S. for reconveyance to CIRI.

On October 9, 1978 the department nominated some 72,000 state acres for conveyance to CIRI in partial fulfillment of the Kenai Pool obligation. This acreage included all or part of approximately 58 state oil and gas leases, of which approximately 48 were eventually conveyed. Included within these lease tracts was one producing state oil and gas lease (ADL 22330). This producing lease was then conveyed to CIRI even though all affected state agencies had the prior opportunity to review and comment on the nominations and no objections were raised.

May 7, 1979 Memorandum of Understanding

On May 7, 1979, the state, CIRI, Seldovia Native Association, Inc. and the Kenai Peninsula Borough entered into a Memorandum of Understanding (MOU) which, among many other things, identified specific state lands (subsurface estate only and surface estate only) near Kenai to be conveyed to CIRI as part of the Kenai Pool state conveyance obligation. Specifically, in return for CIRI's relinquishment, or conveyance to the state, of approximately 9,320 acres of ANCSA 14(f) subsurface entitlement in Kachemak Bay State Park, the state agreed to convey CIRI 9,398 acres of surface estate and 7,933 acres of subsurface estate identified in Appendix E to the MOU. The subsurface estate thus obligated to CIRI is located near Kenai and included 593 acres (100 percent) of a producing state oil and gas lease within the Kenai unit (ADL-00460). In fact, the MOU resulted, or will result, in CIRI's eventual acquisition of approximately 75 percent of the entire Cannery Loop unit. Approximately 2,680 acres of the subsurface estate, including 940 acres subject to federal oil and gas leases, has not yet been conveyed to CIRI, because the state only recently received title to these lands. A portion of these lands were also erroneously conveyed to the state by the BLM. The significance of this will be discussed later in this memorandum.

The MOU (also known as Kachemak I), was principally negotiated on the state side by Chip Dennerlein, then Special Assistant to Commissioner LeResche.

Our records are inconclusive as to the extent that Denerlein involved other departmental agencies in the prior review of the MOU and Appendix E lands.

However, there is a May 4, 1979 memo in the file from Bill Van Dyke, Petroleum Engineer, Division of Minerals and Energy Management (DMEM) to Bill Beaty, Division of Research and Development (DRD). This memo is significant for several reasons. First, it assigned a range of potential oil and gas worth to the MOU Appendix E subsurface lands of between \$50,000,000 and \$120,000,000 (with \$85,000,000 as the most likely value). It also recognized that the Appendix E lands were located in very high oil and gas potential areas, with a well being drilled on one tract and another being spudded on a different tract (Chappell, who lived in Kenai at the time, will report that a Union 76 exploratory well had already hit gas during mid-April, 1979). Finally, it is very unusual that the DMEM memo response was dated May 4, 1979, when in fact, Commissioner LeResche had already signed the MOU on behalf of the state on May 1, 1979 (the last signatory occurred May 7, 1979). At the very least, this timing suggests that the department's negotiation arm was not adequately coordinated with its mineral evaluation arm.

In-Region Pool

In addition to the Kenai Pool, the Terms and Conditions document included, among other things, a mechanism for CIRI to receive another 138,240 acres from several categories of federal land (Section I.C.2.(a)). These federal land nominations are known collectively as the "in-region pool." One such category as outlined in Section I.C.2.(a)(vi) includes "any other federal lands as agreed by the state, CIRI and the Secretary (of Interior), including but not limited to lands withdrawn under Section 17(d)(1) of ANCSA and not withdrawn for any other purpose." Under Section I.C.2.(a)(vi), the state has unlimited veto authority (should we choose to exercise it) over the inclusion of the 17(d)(1) lands in the CIRI pool.

On November 7, 1979, November 30, 1979, and March 27, 1980, the BLM notified the state that certain 17(d)(1) lands near Kenai were being considered for inclusion in the CIRI in-region selection pool. These nominations included several tracts within or adjacent to the Kenai gas field, including areas subject to federal oil and gas leases. Subsequent to the receipt of these nomination notices, Bill Beaty sent out agency notices specifically asking for state agency review and written response expressing concurrence or objection to the proposed BLM action. In response to these notices, our files reveal only one memorandum from DMEM dealing with subsurface resources. On December 27, 1979, Jerry Kreitner and Bob Sanders of DMEM wrote Bill Beaty to comment upon the nomination of two tracts of federal land within one of the (d)(1) CIRI pool nominations. The tract under review, in Section 28 of T5N, R14W, S.M. was located within the Kenai gas field. Although the DMEM memo reflected this circumstance, DMEM did not recommend that the state object to the nomination. Therefore, based upon this and other agency input (none of which included objection

recommendations), Amos Matthews, Director of DRD, wrote BLM on January 29th to support CIRI's selection of this land. In this manner CIRI received title to 160 acres of subsurface estate within the Kenai unit.

CIRI similarly acquired several other subsurface tracts in or near the Kenai unit as a result of these in-region pool nominations even though the department reviewed and commented on all of them. For instance, on July 1, 1980, Alan Carson, Acting Deputy-Director of DRD, wrote the BLM objecting to the placement of certain nominated 17(d)(1) federal lands within the CIRI pool, due to overriding public ownership considerations. However, other lands in the same notice, including areas subject to federal oil and gas leases, were not objected to, and were thus allowed by the state to enter the pool and were subsequently conveyed to CIRI.

Approximately 43 percent of CIRI's existing royalty income from the Kenai unit was obtained with state concurrence via the (d)(1) land in-region pool mechanism. As far as I can tell, the state did not object to a single nomination based solely or in part upon subsurface values or interests. The resultant effect was the loss of the state's 90 percent royalty share from federal oil and gas lease revenue on these lands. I have not, however, had an opportunity to determine the extent of this lost revenue.

ANCSA Section 14(g)

I believe another contributing factor to account for CIRI's receipt of valuable state and federal oil and gas interests was a fundamental lack of understanding by state officials of Section 14(g) of ANCSA during implementation of the Terms and Conditions.

Section 14(g) provides that in the event a patent to an ANCSA corporation does not cover all of the land embraced by a lease, the corporation is entitled to a proportionate amount of revenue from such lease. This is determined by multiplying the total of such revenue by a fraction in which the numerator is the total acreage of such lease included in the patent and the denominator is the total acreage contained in the lease. CIRI's share of a federal lease royalty is thus based upon the proportionate amount of acreage owned by CIRI within a particular lease. BLM does not segregate that portion of a federal lease tract which may lie outside a unit boundary. In other words, CIRI can obtain a royalty share of a producing unit merely by obtaining ownership to a portion of a lease participating in a unit agreement, even if the portion acquired lies outside the unit area. The resultant CIRI royalty share is then based upon the acreage of the portion of the jointly owned leasehold within the unit area, whether or not the lease owned all or in part by CIRI is producing.

For example, if CIRI owns one-half the acreage of a federal leasehold outside a producing unit and the other one-half of the leasehold is federally owned and in the unit, CIRI will receive about 12.5 percent royalty from the unit - even though CIRI does not actually own any land in the unit. In addition, the state would lose that portion of its 90 percent share of royalties from the federal land.