DECISION AND FINDINGS OF THE COMMISSIONER
DEPARTMENT OF NATURAL RESOURCES

KUPARUK RIVER UNIT AGREEMENT

March 26, 1982

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I. INTRODUCTION AND BACKGROUND

On December 16, 1981, an application was submitted by ARCO Alaska, Inc. (ARCO) on behalf of the working interest owners to the Director, Division of Minerals and Energy Management (DMEM) for approval of the Kuparuk River Unit Agreement. The Kuparuk River Unit Agreement includes 100 oil and gas leases covering approximately 237,776 acres of state land immediately west of the Prudhoe Bay Unit. About 30 exploratory wells and 40 development wells have been drilled within the proposed unit area. ARCO has constructed a base camp and central production facility within the proposed unit area and a pipeline from the central production facility to Pump Station No. 1 on the Trans-Alaska Pipeline system. Production commenced, on a lease basis, on December 13, 1981.

All of the 100 oil and gas leases covering lands within the unit area were issued on State of Alaska lease form DL-1 (revised October, 1963). This 1963 form is substantially different from the lease form used in recent state lease sales.

The format of the proposed Unit Agreement is modeled after the state's standard unit form (DMEM 6-81, revised June 29, 1981). The state standard Unit Agreement form was substantially revised in June of 1981 and drafted to coincide with the language and intent of the oil and gas leases issued by the state since 1979 as well as to reflect the revisions in the state's unitization regulations which became effective in June of 1981. It was realized at the time that the state's standard unit form was being drafted that some of the provisions in the form were changes in intent and deviations in policy when compared to the language used in the oil and gas leases issued by the state during the 1960s for lands in the Kuparuk area. While the standard state format provides the basis for the Unit Agreement, numerous changes in the form have been accepted to accomodate the terms of older lease contracts and in the interest of securing a voluntary unit.

The Unit Agreement provides for plans of development and operations within the unit area without regard to lease boundaries and diverse ownership of those leases.

The Unit Agreement includes a general Plan of Development (Exhibit E) and a detailed Plan of Development for 1982 (Exhibit E-A) that set forth the planned phased development of the unit, including the construction of roads and drill sites, the drilling of wells, the building of central production facilities, the installation of waterflood facilities and the construction of support facilities. Future Plans of Development will be submitted on an annual basis for approval by the Commissioner.

The Unit Agreement provides for separate approval by the Commissioner of a Unit Plan of Operations before any operations may be undertaken within the unit area. The plan must contain statements and maps or drawings giving the sequence and schedule of operations; the projected use requirements of the proposed operations, including location and design of well sites, material sites, water supplies, waste sites, buildings, roads and utilities; plans for rehabilitation of the affected area; and a description of procedures designed to minimize adverse effects on other natural resources and other uses of the

area including fish and wildlife habitat, historic and archeological sites and public use. These plans are circulated to the Departments of Fish and Game and Environmental Conservation for their review and comment prior to being approved by the Commissioner.

Pursuant to 11 AAC 83.306, the Deputy Director, DMEM, determined that the application as submitted by ARCO was complete on December 16, 1981. Pursuant to 11 AAC 83.311, public notice of the application was published in The Anchorage Times and The Anchorage Daily News on December 24, 1981 and in the Tundra Times on December 29, 1981. The notice invited comments from interested parties and members of the public on the application. The North Slope Borough was notified of the application by letter dated December 22, 1981, and comments from the Borough were also invited.

Timely written comments on the application were received from the North Slope Borough, the Alaska Department of Fish and Game (ADF&G), and Exxon Company, U.S.A. (Exxon).

The North Slope Borough did not have any objections to the application and recommended that it be approved.

The Department of Fish & Game expressed concern for fish and wildlife resources and subsistence uses. These concerns are discussed in more detail in Section III under "Factor #3: The Environmental Costs and Benefits of Unitized Exploration or Development."

Exxon intially opposed approval of the Unit Agreement (by letters of January 25 and March 16, 1982). On March 22, 1982 Exxon withdrew its objections and now supports formation of the unit.

Throughout this finding and decision the terms lessee(s), working interest owner(s), and applicant(s) will be used interchangably.

II. DISCUSSION OF CRITERIA

In accordance with 11 AAC 83.303, the Commissioner will approve a Unit Agreement for state oil and gas leases if he finds that the agreement is necessary or advisable to protect the public interest. In determining whether a proposed unit agreement is necessary or advisable to protect the public interest, the Commissioner will consider the following factors:

1. the conservation of all natural resources;

2. the prevention of economic and physical waste;

3. the environmental costs and benefits of unitized exploration or development;

4. the geological and engineering characteristics of the potential hydrocarbon accumulation or reservoir proposed for unitization;

5. prior exploration activities in the proposed unit area;

6. the applicant's plans for exploration or development of the unit area;

7. the economic costs and benefits to the state;

8. the protection of all parties in interest, including the state; and

9. any other factors, including measures to mitigate impacts identified above, he believes are relevant to determine whether a proposed Unit Agreement is necessary or advisable to protect the public interest.

A discussion of these factors follows:

A. Factor #1: The Conservation of all Natural Resources

Unitization and unitized operation of reservoirs as a means of conservation of natural resources has been recognized both inside and outside the petroleum industry for some time. The conservation problem in petroleum production arises out of the joint effects of three conditions: (a) the existence of two or more owners of operating rights in a single reservoir; (b) the migratory nature of oil and gas; and (c) the disturbance of original ownership interests through injection of outside substances which may move hydrocarbons across lease lines. The tendency of petroleum to migrate within a reservoir gave rise to a doctrine of property rights known as the "rule of capture." According to this rule, petroleum ultimately belongs to the land owner (or lessee) who captures it through wells located on his land, regardless of its original location. The owner (or lessee) can protect his title only by taking possession of the petroleum in place before it is drained away by wells on neighboring land. Without unitization, the process of unregulated development tends to be a race for possession by competitive operators. The results are overly dense drilling, especially along property lines; rapid dissipation of reservoir pressure; irregular advance of displacing fluids; and therefore loss of ultimate recovery. The density of activity and the haste to get oil to the surface also increases the likelihood of damage external to the reservoir (such as spills and other surface impacts). While Conservation Orders and Field Rules issued by the Alaska Oil & Gas Conservation Commission would mitigate some of the above identified impacts, unitization and unitized operations provide the only practical method for achieving the desired results of maximum oil and gas recovery and minimum negative impacts on other resources.

To date, in all cases where unitization of a reservoir was required, the state and its lessees have entered into a voluntary unit agreement. Both the Department of Natural Resources and the Alaska Oil and Gas Conservation Commisssion have authority (AS 38.05.180 and AS 31.05.110, respectively) to require lessees under certain conditions to operate under a unit plan and to prescribe such a plan if necessary.

Unifying the ownership of a reservoir by assigning an undivided equity to each affected party alleviates the adverse incentives described above. Under this arrangement, each operator is indifferent to the activity of his neighbor since an agreed share of oil and gas is assigned to each lease regardless of which lease ultimately produces the oil and gas. Unitization helps eliminate wasteful practices, minimize development activity for a given level of production, and conserve all natural surface and subsurface resources.

The Kuparuk Unit Agreement meets the criteria addressed under Factor #1. The Unit Agreement provides for the conservation of both surface and subsurface resources through Unit Plans of Development and Unit Plans of Operations as well as through the unitized (rather than the lease-by-lease) operation of the reservoir.

B. Factor #2: The Prevention of Economic and Physical Waste

The assignment of specific shares of oil and gas to each affected lease largely resolves the resource conservation problem. However, economic and physical waste could still occur in the absence of a cost sharing formula and a well engineered development plan. To be complete, a Unit Agreement must provide for the division of costs as well as hydrocarbons (benefits) and set forth a development plan for maximizing physical and economic recovery from the reservoir. While the assignment of hydrocarbon shares prevents hasty or excessive development, the absence of a cost-sharing agreement severely inhibits the development of common surface facilities and operating strategies. A cost-sharing agreement, as well as a mutually selected single Unit Operator, enables rational decisions regarding well spacing, reinjection strategy, and the development of a minimum number of common, joint-use surface facilities. Unitization prevents economic and physical waste by eliminating redundant expenditures for a given level of production, and avoiding loss of ultimate recovery through a unified reservoir management strategy.

The benefits of unitization are particularly applicable to reservoirs containing economically marginal areas. In such areas, added reserves are often gained through unitized operations. Capital savings as a result of little or no duplication of facilities and better reservoir management through pressure maintenance and secondary recovery procedures allow less profitable areas of a reservoir to be developed and produced. Under varying assumptions concerning price, rate of production, field costs, and dry hole risk, investment in the Kuparuk River Unit, taken as a whole, offers a modest to moderate return on equity. However, when examined in phases corresponding to anticipated stages of development, the Kuparuk field is found to contain substantial economically marginal acreage. This acreage, containing as much as one-third of total potentially recoverable reserves, would not be readily developed if severed from the unit and developed separately since its profitability depends on the sharing of the central development and field support facilities.

The lease form (Article 32) and the statutes [AS 38.05.180(p)] provide for possible renegotiation of the drilling, royalty and producing requirements of the lease at the time of unitization. In the case of the Kuparuk Unit renegotiation of the royalty provision was not feasible or prudent. The most productive sections of the reservoir have been or will be developed by the time the leases are set to expire. The fringes of the reservoir would not support a higher royalty without significantly impairing ultimate production.

The Kuparuk Unit Agreement meets the criteria addressed under Factor #2. The Unit Agreement provides for the prevention of economic and physical waste. A single operator will develop and produce the area, and the Unit Agreement sets forth a comprehensive Plan of Development. Research and analysis of the geologic and fluid properties of the reservoir are to continue and secondary recovery (water flooding) studies already are underway. Unused natural gas will be reinjected back into the reservoir.

C. Factor #3: The Environmental Costs and Benefits of Unitized Exploration or Development.

The area encompassed by the Kuparuk River Unit Agreement is habitat for a variety of fish and game and used by residents of the North Slope for subsistence hunting and fishing. The impact of oil and gas activity on this habitat and subsistence activity will be reduced if the Unit Agreement is approved relative to the approval being rejected and the leases developed and produced individually. Unitization will enable development and production of the resources with the minimum amount of surface impact. Even with unitization, it is likely that oil and gas activity in the Unit Area will impact some habitat and subsistence activity. The extent of this impact will depend on a number of variables, including the measures taken to mitigate and reduce the impact; the overall effectiveness of these measures; the availability of alternative habitat; and the ability of the fish and game to adapt to some displacement and changes in their habitat. If ongoing measures* are continued to minimize surface impacts, the oil and gas activity within the area is not likely to significantly impact bird, fish and mammal populations, with the possible exception of caribou.

The potential impact on caribou that use the area is uncertain. The Unit Area is used by the Central Arctic Herd for migratory movements, insect relief, calving, feeding, and rearing. To date, behavior patterns of the Central Herd have been modified by certain types of oil field development in the Prudhoe Bay area, but the overall population has not exhibited any decrease in numbers. In fact, census figures indicate that the size of the herd is increasing. The Alaska Department of Fish and Game (ADF&G) recognizes this, but is concerned that increased oil and gas activity in the Unit Area could lead to reduced survival of calves resulting from disturbance-induced displacement of cows from traditional calving grounds. A second major concern involves the potential restriction of summer caribou movements in response to insect harassment, specifically the potential impacts of reduced access to coastal insect relief areas.

The northern part of the unit area has been identified as the principle area of usage and occupation by the herd and thus the principle area of importance. To date, actual construction and development and pending and permitted construction and development have occurred for the most part in the

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*measures include avoiding if possible, sensitive wetlands and habitats, seasonal restrictions on certain activities in certain areas, consolidation of facilities, regulation of waste disposal, maintenance of existing drainage patterns and providing for passage of fish and game.

southern part of the Unit Area. The Oliktok Dock proposal and its access road are the principle construction projects pending in the northern part of the Unit Area. The Oliktok dock project is a proposal to build a barge off-loading facility at Oliktok Point, north and outside of the Unit Area. Proposed development in the northern part of the Unit Area is referred to in the Unit Plan of Development as Phase III and the Central Productin Facility 3 area. Development in the Phase III area is scheduled to begin around 1985. The ADF&G has identified data that it currently believes is necessary to have prior to their review of Unit Plans of Operations for pipeline proposals in the Phase III area in order to protect the Central Arctic Herd. In order to aid ADF&G in its review of future pipeline proposals, the unit operator is strongly encouraged to submit detailed pipeline elevation profiles indicating the height above the tundra surface for all pipeline approvals being requested at least three months prior to the date Unit Plan of Operations approval is desired. The detailed pipeline elevation profiles would be in addition to the standard submittal requirements for plans of operations. The Unit Operator will also work cooperatively with ADF&G in assessing preferred caribou usage and caribou movement areas in the Unit area. The Unit Operator shall also complete the 3-year Kuparuk Pipeline Caribou study begun in 1981 if after the second year the project researchers find that the continuation of the study into the third year is necessary. While the first year's data from this study are very informative and provide a valuable insight into caribou-pipeline interactions, the data which will be collected during 1982 (and 1983) should substantiate the 1981 results as well as broaden the overall understanding of caribou behavior. Results from this study should be directly applicable to proposed future development activities in the Phase III area.

The ADF&G has recommended that approval of the Kuparuk Development Plan be contingent upon the development of a surface management plan developed jointly by the Unit Operator, the Department of Natural Resources, and the Department of Fish and Game. The benefits of the plan, as perceived by the ADF&G, would include a reduction in fish and wildlife losses, a considerable reduction in the time necessary to review and approve permits, and the possibility that a large number of general permits could be developed for the area.

As an alternative to this plan, it has been decided to require the Unit Operator to meet at least once annually with resource agencies and interested parties to discuss future development plans. These meetings would be similar to the gravel conferences that ARCO has sponsored in the past which have proved to be very helpful in planning for and discussing future activity.

Portions of the Unit Area are used for subsistence hunting and trapping. Currently, portions of the Prudhoe Bay Unit are closed to hunting and a request has been made to the Alaska Board of Game to close portions of the current operating area of the Kuparuk Unit. As development expands in the area, it is likely additional requests to close areas will be made. These closures will reduce the area available to North Slope residents for hunting. The impact of these closures is difficult to assess. Other hunting areas are available and some species, such as caribou, may show increased preference for these other areas as development activities continue in the unit area. Nonetheless, the area available to hunters will be reduced, which may lead to a reduction in the success of hunting activity by some individuals.

The Kuparuk Unit Agreement largely meets the criteria set forth in factor #3. Some environmental impact is likely to occur even with unitized operations, however the amount of impact will be minimized as a result of unitization. Subsistence activities also are likely to be impacted slightly but the amount of impact will be minimized as a result of unitization.

D. Factor #4: The Geological and Engineering Characteristics of the Reservoir.

Geological and engineering test data from exploratory and development wells within the proposed Kuparuk River Unit were evaluated to determine the appropriateness of the proposed unit boundaries. These data included both confidential and non-confidential well logs, samples, core descriptions and test results. In addition, structure maps, isopachous maps and net-pay maps derived from these data were examined.

The results of these evaluations support the delineation of the proposed participating area and the unit boundary is supported by the subsurface geology. The initial participating area includes the indicated limit of the economically producible Kuparuk River Reservoir as it is defined at this time. In recognition of the possibility that additional drilling and delineation will expand the areal extent of the economically productive limits of the Kuparuk River Reservoir, the proposed unit boundary provides an adequate, yet not excessive, buffer to accommodate expansion of the participating area.

The Kuparuk Unit Agreement meets the criteria set forth in Factor #4. The Unit Area and participating area are consistent with the subsurface geologic and engineering data.

E. Factor #5: Prior Exploration Activities in the Unit Area.

Oil was discovered within the proposed Kuparuk River formation within the proposed unit area by Sinclair Oil Company at its Ugnu No. 1 well in 1969. Since 1969, about 30 exploratory wells and 40 development wells have been drilled and hundreds of miles of multi-fold seismic data have been acquired in an attempt to define the limits of the Kuparuk River oil accumulation. The exploratory wells are scattered throughout the proposed unit area whereas the 40 development wells were drilled from five drill pads located on five ARCO leases. The development wells are currently being produced on a lease basis.

The lessees have been diligant in exploring the unit area, and the Kuparuk Unit Agreement provides for continued exploration and delineation of the unit area.

F. Factor #6: The Applicants' Plans for Exploration or Development of the Unit Area.

Current exploration plans provide for drilling at least five more delineation wells during the next ten years to define the final extent of the Kuparuk Participating Area. The first of these wells, the Oliktok Point No. 1, is being drilled this winter season.

The Unit Plan of Development provides for a multi-rig development drilling program based on two drilling rigs at this time and increasing up to six or eight rigs by 1986. It is estimated that about 800 wells will be required for oil production, water and gas injection and reservoir monitoring. Wells will be directionally drilled from drill sites centrally located within four-section drilling blocks. Oil produced will be processed at one of three central production facilities, the first of which is now in use. Initial production will be by solution gas drive assisted by gas lift.

Secondary recovery operations by waterflooding are planned to commence in mid-1983. Initially water will be obtained from the Upper Cretaceous/Tertiary water sands. The probable ultimate source of water is the Beaufort Sea when the full field-wide waterflood operation commences between 1985 and 1987.

The drilling program to date has also established the existence of oil accumulations in the Upper Cretaceous and Tertiary sands as well as in the Kuparuk River formation. The Upper Cretaceous and Tertiary sands generally overlie the Kuparuk River Reservoir in the Kuparuk River Unit area and will be evaluated during the development and delineation of the Kuparuk River Reservoir. If reservoir and economic conditions are favorable, the Upper Cretaceous and Tertiary sands could be developed in conjuction with the Kuparuk River Reservoir.

The Unit Plan of Development sets forth a comprehensive long range reservoir development program and provides for secondary recovery operations to commence in the near future.

G. Factor #7: The Economic Costs and Benefits to the State.

The Kuparuk River Unit Agreement is to the economic benefit of the state because it maximizes physical recovery of hydrocarbons and eliminates redundant capital outlays. As a result, the state's long-term royalty and tax revenues are enhanced and private development capital is available for alternative oil and gas activity in the state. Also, by having a single operator, the Unit Agreement significantly reduces administrative burdens to the state.

Article 32 of the oil and gas leases (form DL-1) proposed for inclusion in the unit area allows for the renegotiation of rental and royalty rates "with the consent of Lessee" upon unitization. Neither rental nor royalty upward adjustments were found advisable in the case of the Kuparuk River Unit Agreement. The substantial marginal acreage in the unit is economically sensitive with respect to royalty rate and development potential and, being less defined, is subject to a higher dry-hole risk and higher geologic uncertainty. Under conditions of stable real oil prices, higher dry-hole risk and/or increased royalties, a significant portion of the unit area does not appear economically viable for development. Under present royalty terms, development of the unit area can go forward.

The central (Phase 1) development area presently under production is found to have a moderate to good real rate of return, depending on the assumptions. While the central development area could, under optimum conditions, sustain a higher royalty rate, lower ultimate recovery may result since royalties are

calculated on the value of hydrocarbons produced rather than their cost of extraction. Industry decision makers will halt production at the point extraction costs exceed the value (after payment of royalty) the product. In addition, a shortened, less profitable production schedule in the central development area could cause lessees to reassess their capital commitment to Kuparuk Unit in general. Should an overall lower level of capital investment result, production from certain marginal areas will be postponed or foregone since that development depends on infrastructure development on the more productive lands. Because these more productive lands are already being developed outside of a Unit Agreement, it is unlikely that lease holders in these areas would voluntarily commit their leases to a unit under increased royalty provisions. In this case, renegotiation of the present unified royalty rate is not found to be in the state's overall interest. Under certain scenarios, higher royalty rates could actually reduce the state's total royalty and production tax revenue from this field.

Rental rate adjustments are not recommended for reasons similar to those stated above. Increased rentals represent fairly negligible costs to many of the lessees and would probably not influence the present development plan. However, the long-term negative impact of such action would likely outweigh the modest state revenues generated. Generally speaking, fixed payments are not responsive to a project's profitability or rate of production. They represent a burden which translates into a lower rate of return from the lessee's viewpoint and invite a milder version of the royalty pitfalls described above. More importantly though, the precedent set by a decision to increase rentals will adversely impact the implied value of future leases, since industry would likely adjust its bidding behavior in anticipation of rental changes upon unitization. While this does not mean there will be no renegotiation of royalties/rentals in all future unitization negotiations, renegotiation in this instance is not favored by the state. The state is not limiting its ability to adjust or influence ultimate Kuparuk revenues by leaving present royalties/rentals intact. The recently augmented oil and gas production tax suggests that the state's oil and gas revenue generating capability and flexibility will remain elastic.

H. Factor #8: The Protection of All Parties in Interest, Including the State.

The principle aim of unitization is the protection of all parties having an economic interest in a common oil and gas reservoir. Unitization conserves natural resources and prevents economic and physical waste by a) eliminating the many competing interests for operating a common reservoir, while b) retaining separate interests and accounts for sharing equitably in costs and benefits based on original ownership.

By approving the Unit Agreement all parties are assured an allocation of costs and revenues commensurate with the value of their leases.

The Kuparuk River Unit Agreement protects the state's economic interest by maximizing physical recovery and thereby the production-based revenue accruing to the state. By preventing economic and physical waste, the Unit Agreement also minimizes impacts to the region's cultural, biological, and environmental resources. The agreement contains equitable provisions for reporting and record-keeping, provides for state concurrence with operating procedure, and

adequately provides for royalty settlement, in kind taking, and emergency storage of oil. The exact language of these and other provisions of the agreement, which affect the state's interests, are further discussed in Section III.

III DIFFERENCES BETWEEN THE KUPARUK RIVER UNIT AGREEMENT FORM AND THE STANDARD STATE FORM

The proposed Kuparuk River Unit Agreement was drafted in the same format and language as the standard state form with some minor differences in language and two substantive differences. The following is a review and discussion of the differences between the proposed Kuparuk River Unit Agreement and the standard state form.

A. Recitals

The recitals in the Kuparuk River Unit Agreement are the same as those in the standard state form except that three additional recitals have been added. These include:

1. A discussion of the ARCO West Sak River No. 1 Well covered by state lease no. ADL 25649 which, along with other subsequent wells, confirmed the existence of a major oil field on the Arctic North Slope of Alaska.

2. Recital regarding AS 31.05.110 of the Alaska Oil and Gas Conservation Act which indicates that the Working Interest Owners may validly integrate their interest to provide for unitized management, development and operation of the tracts as a unit.

3. A reference to AS 38.05.180(p) which indicates that lessees may operate under a cooperative or Unit Plan of Development when determined and certified by the Commissioner to be advisable in the public interest.

The Working Interest Owners do not view these as deviations from the standard state form, but merely clarifying the statutory bases on which unitization is accomplished. The department has no objection to the addition of these recitals in that they do not materially alter the unit agreement.

B - Article 1

Article 1 sets forth the definitions utilized in the Unit Agreement. The definitions section is substantially similar to the state form except for the following modifications:

1. A definition of the "Kuparuk River Reservoir" is included which identifies the Reservoir as the basis for the Kuparuk Participating Area.

2. The "Kuparuk Participating Area" is defined.

3. The definition of "Outside Substances" has been modified from the standard state form. The use of the word "consideration" in the standard state form has been deleted.

4. The definition of "Participating Area Expense" included in the state form has been deleted since the Unit Operating Agreement indicates that all area expense (Participating Area Expense) is considered "unit expense". Also, the "Unit Expense" definition has been modified to reflect this change.

5. The definition of "Paying Quantities" has been revised to delete the phrases refering to the transportation and marketing of unitized substances. The Paying Quantities definition used in the Unit Agreement is that definition which the Working Interest Owners assert they have operated under since the time these leases were issued. Because commercial hydrocarbons have been discovered and are already being produced, the definition of paying quantities in this case is not a material element in the Unit Agreement.

6. The definition of "Reservoir" has been slightly modified to indicate the geological interpretation and confirmation that is necessary to identify a Reservoir.

7. A definition of "Legal Subdivision of Land" has been added to the Kuparuk River Unit Agreement. The acreage number is the same as the standard state form, but additional language has been added to ensure consistency with Conservation Order No. 173 and the remaining sections in the Applicants' form.

The changes proposed by the lessees to Article 1 of the standard state form were accepted. The language is consistent with the standard form and does not impair the intent or operation of the substantive provisions of the unit agreement.

C - Article 2

The Exhibits contained in Article 2 are the same as those contained in Article 2 of the standard state form with exception of the following:

Exhibit A in the Unit Agreement indicates the royalty rate applicable to each tract in the Unit area. This is included in the standard state form in Exhibit H.

Exhibit E in the Unit Agreement is the Unit Plan of Development contemplated in Exhibit G of the standard state form. There is no separate plan of exploration since this is a development and production unit. However, the Unit Plan of Development does provide for investigation, exploration and analysis of other potential hydrocarbon-producing horizons in the unit area.

Finally, Exhibit E in the standard state form includes a schedule for the allocation of participating expense. This has not been included in the Kuparuk River Unit Agreement. Participating Area Expense has been agreed to

be shared by the Working Interest Owners as set forth in the Unit Operating Agreement. There are no net profit share leases contained in the Kuparuk River Unit Area which the applicants cite as the justification for elimination of the section regarding Unit Expense.

The tract participations for the Kuparuk Participating Area are set forth in Exhibit C. In addition, as is set forth in Article 7 of the Unit Agreement, there is an application pending for benefit of discovery royalty (5%). That tract is number 22 and is ADL 25633.

The changes proposed by the applicants to Article 2 were accepted. The changes made to the Exhibits format were not material. The tract allocations and participations set forth in Exhibit C were equitable and justifiable on a geologic basis, including the allocation provided to the tract with the application for benefit of discovery royalty.

D - Article 3

Article 3 of the Kuparuk River Unit form and the standard state form are the same except for the following modifications:

1. An additional sentence has been added to Article 3.3, which states "Unit Operations, if conducted under and in compliance with an approved Plan of Development, shall continue each Lease in the Unit Area in effect as if the Unit Operations were conducted on each tract so long as the particular Tract remains committed to this Agreement." This is one of the standard principles of unitized operations.

2. The standard state form contains Articles 3.4 and 3.5 dealing with rental settlement and minimum royalty. Article 3.4 of the Applicants' form combines these two references into one article. The Kuparuk River Unit applicants propose to retain separate minimum royalty and rental obligations (as provided in DL-1 leases) rather than deleting minimum royalty and converting to a pure rental system (as provided by current statute). Rental payments are due at the beginning of each year, whereas minimum royalty payments are due at the end of each year. This slightly prolonged collection period for minimum royalty payments over rental payments is not found to materially affect the state's interests.

3. Article 3.6 of the proposal concerning surface and subsurface operating rights is similar to Section 3.7 of the standard state form. These provisions are consistent with the basic theories of unitization where the unit area is operated as one lease.

The changes proposed by the applicants to Article 3 were accepted. In this case, the change to Article 3.4 was accepted on the basis of the original lease contracts. Changes to the rest of the Article did not materially affect the intent or operation of the Unit Agreement.

E - Article 5

Article 5 of the proposed Kuparuk River Unit Agreement differs substantially from the standard state form.

First, the section requiring Plans of Exploration in the state form has been deleted. The Kuparuk River Unit is not an exploration unit but a development and production unit. The sections regarding the Plan of Development in the Applicant's form are substantially similar to the state form. Article 5.1.4 has been added and recognizes one of the principles of unitization, that is, performance of the obligations for development and operation set forth in the Unit Plan of Development satisfies and replaces the obligations for performing operations on each and every tract included within the Unit Area.

The section in the standard state form dealing with Plans of Operation and the sections in the Kuparuk River Unit Agreement are substantially similar. The first three subparagraphs of the standard state form have been deleted. These parts are not applicable to the proposed Kuparuk River Unit Agreement because the state still retains all the surface estate.

Finally, Article 5.3 of the proposed Kuparuk River Unit Agreement regarding rate of production and development places additional restrictions on the Commissioner's ability to modify the rate of production and development when compared to the standard state form. Article 5.3 of the proposed Kuparuk River Unit Agreement indicates that the Commissioner may, after giving written notice to the Operator, require the Unit Operator to modify the rate of production and development from the Unit Area. However, any modification is limited by the terms set forth in the remainder of the paragraph. It is not intended to preclude or in any way inhibit the Commissioner's exercise of his authority to prevent waste or respond to an emergency condition. The Working Interest Owners have based development and financing of the Kuparuk River Unit on a Plan of Development which ultimately projects a production rate of 250,000 barrels per day. The selling of production payments and other similar means of financing was utilized to secure necessary capital for this large-scale project. Potential modification of the rate of development or rate of production would impact the ability of the Working Interest Owners to secure future financing and may directly affect financing which has already been secured. In addition, the Working Interest Owners must often commit to design and purchase contracts up to five years in advance to ensure that material and equipment are designed, purchased, fabricated and transported to the North Slope for timely installation. To vest the Commissioner with the authority to substantially curtail either the rate of production or rate of development from that originally approved in the Plan of Development, absent an emergency or an order from the Alaska Oil and Gas Conservation Commission, in this case, might frustrate the basic purpose of unitization as well as render impossible the long-term financing of the venture. The Commissioner can make modifications to the production and development programs if the modifications do not impair the overall goals and objectives set forth in the approved Plan of Development.

The Unit Plan of Development sets forth a phased development program which requires substantial capital commitments over the next 10 years to bring about the optimum development of the field and provide for the maximum ultimate recovery of resources to both the Working Interest Owners and the state.

The remaining provisions in Article 5 of the Applicants' Agreement are substantially similar to the provisions in the standard state form.

The changes proposed by the applicants to Article 5 were accepted. The changes made to Article 5.3 were justified given the requirements and conditions outlined in the initial Plan of Development and the commitments necessary by the working interest owners to undertake and proceed with a project of this magnitude. The other changes to Article 5 did not materially affect the operation or intent of the unit agreement.

F - Article 6

Article 6 sets forth the Kuparuk Participating Area and provisions for expansion and contraction of the Kuparuk Participating Area. These provisions are substantially similar to the provisions set forth in the standard state form.

Article 6.1.1 of the standard state form is not included in the proposed Kuparuk River Unit Agreement. Formal request for certification of the Reservoir as capable of producing in commercial quantities was submitted with the unit application and is being issued as a separate Decision.

Article 6.3 sets forth provisions on Participation and other Participating Areas and contains provisions in addition to the standard state form for those instances where all the parties do not agree on those new participating areas. The proposed changes to Article 6 were accepted. These changes were not material.

G - Article 7

Article 7 of the proposed Kuparuk River Unit Agreement is substantially different from the standard state form. The basic reasons for modifying the standard state form are that the provisions contained in the leases to be committed to the Kuparuk River Unit Agreement differ substantially from the provisions in the standard state form and the new state leases. The interpretation of the royalty provisions of the DL-1 leases is presently in litigation. Article 7 of the proposed Agreement as written is based on the following six points:

1. The same royalty owner and the same basic royalty rate apply throughout the Unit Area;

2. Since the same basic royalty rate is applicable, it is the Working Interest Owner's view that the state has no interest in approval of the allocation of tract participations to the Kuparuk Participating Area. However, the initial tract participations are set forth for approval as required in Exhibit C, and the basis for final determination of tract participations is set forth in the Kuparuk River Unit Operating Agreement;

3. There is an application for certification of a discovery royalty pursuant to the terms set forth in the original lease. This provision allows a reduction in royalty from 12.5 percent to 5.0

percent for a period of ten years on the lease which overlies the first discovery of oil and gas in commercial quantities. The unit agreement allocates production to the lease in question in a sound and equitable geological and engineering manner.

4. The leases set forth basic provisions concerning the calculation of the price or value of the royalty oil and gas, and these provisions are currently in litigation between the State of Alaska and all but one of the Applicants;

5. The leases set forth terms of notice provisions for taking royalty production in kind, which the Applicants and the state wish to modify; and

6. The leases set forth provisions on the charges (field costs) applicable for cleaning and dehydration of royalty oil and gas produced, which are disputed, and which the Applicants and the state wish to resolve.

Items 1, 2, and 3 do not materially impact the intent or operation of the substantive parts of the Unit Agreement. Negotiation of items 4, 5, and 6 have led to substantial revision of Articles 7.5 (royalty in-value) and 7.8 (royalty in-kind) of the standard state form. These are sections 7.5 and 7.7 respectively in the Applicant's proposal.

Article 7.5 of the standard state form calls for the value of unitized substances payable to the state to be not less than the highest of: 1) the field price received by the Working Interest Owner for the unitized substances; 2) the volume-weighted average of the three highest field prices received by other producers in the same field or area; 3) the Working Interest Owners' posted price in the field or area; or 4) the volume-weighted average of the three highest posted prices in the same field or area of the other producers in the same field or area. The standard state form Article (7.5) also states that the Commissioner may establish minimum values for computing royalties, with consideration being given to the actual price received, prices paid in the same field or area, posted prices, and "other relevant matters".

Article 7.5 of the proposed Kuparuk River Unit Agreement is different from that contained in the standard state form. The interpretation of the royalty provisions in identical Prudhoe Bay Unit DL-1 leases is presently in litigation. Consequently, the proposed unit agreement calls for royalty payments for the Kuparuk DL-1 leases to be made according to the same terms as the final disposition of the Prudhoe Bay litigation, State of Alaska v. Amerada Hess Corporation, et al (C.A. No. 77-747. Superior Court for the State of Alaska, First Judicial District at Juneau). (Amerada Hess). Pending resolution of the above litigation, payment of royalty is to be made on an interim basis in the same manner as royalty is paid on production from the Prudhoe Bay Unit.

In the case of the Amerada Hess, the industry is challenging the state's prevailing price method for computing in-value royalty. That method is calculated by a highest price volume-weighted average formula, akin to that outlined in the state's standard unit form. But even under the most favorable

outcome of the litigation, it is doubtful that resulting revenues will match those which could be generated under the provisions of state standard form. This stems from the fact that the prevailing price method takes into account a larger group of prices than the state standard form where the average is calculated from a variety of prices and involves no more than three maximum prices. It follows therefore that the state would receive greater revenues under the state standard form. However, given that the royalty provisions of similiar leases are in litigation (for Prudhoe Bay), the applicants would not voluntarily accept the royalty terms of the state standard form. It is concluded that resolution of the invalue royalty dispute through linkage to the aforementioned litigation is in the best interest of all parties concerned.

The individual leases also provide that when the state takes its royalty in kind, that "[s]hould Lessee dehydrate or clean the oil or gas produced from said land, Lessee shall be entitled to an allowance of the actual cost of dehydrating or cleaning said royalty oil or gas." When the state takes its royalty in-value, the leases provide that "Lessee shall pay to Lessor the field market price or value at the well of all royalty oil and/or gas." Further, AS 31.05.110(h) provides in part that "The landowners' royalty share of the unit production allocated to each separately owned tract shall be regarded as royalty to be distributed among, or the proceeds of it paid to the landowners, free and clear of all unit expense and free of any lien for it."

The state and the lessees disagree but have agreed to settle the issue of whether and to what extent the state's royalty share is subject to the costs (field costs) incurred by the lessees in cleaning and dehydrating the Kuparuk oil. The Lessees presented the state with material showing that, according to the Lessee's current cost accounting, the state Kuparuk royalty share is subject to a field cost charge of 88.2¢ per barrel in 1981 dollars, and contended that under the provisions of the leases and statutes the state was obligated to pay that amount regardless of whether the royalty was taken in-kind or in-value.

This disagreement was also the subject of litigation in State of Alaska v. Amerada Hess (C.A. No. 77-747. Superior Court for the State of Alaska, First Judicial District at Juneau). (Amerada Hess). It involved field costs incurred at the Prudhoe Bay Unit and involved most of the parties in the Kuparuk Unit. The arguments for and against the charge of costs to the state's royalty share were extensively briefed and argued before the Superior Court, and this portion of the case was eventually settled after a preliminary ruling by the court. Since the same lease terms and statutes will be involved in numerous other units which will come before the state, and litigation may be necessary in the future, the state will not comment on the ultimate success of any futher litigation. As in almost every dispute that is in litigation however, 100% chances of success are rare. The briefs and arguments are publically available in the files of Amerada Hess and provide some of the basis for considering settlement of this (Kuparuk) dispute.

After lengthy negotiation, the state and the lessees have agreed* upon a

*A copy of the working interest owners' letter outlining this agreement is attached to this Finding and Decision.

formula for the payment of field costs which provides for the payment by the state of 39.5¢ per barrel on all royalty oil with 75% of that charge being escalated annually by changes in the Producer Price Index beginning in 1983. The agreement also provides that if the Kuparuk Pipeline is extended to the proposed Central Production Facilities 2 and 3, the 39.5¢ charge will be retroactively reduced to 33.5¢ (or its escalated equivalent). This agreement will be formally executed by the state and the working interest owners in the near future and will become Appendix I to the Unit Agreement.

As with any negotiated settlement, the final resolution represents a departure from each party's perception of its ultimate legal rights. In deciding to accept this settlement, the department relied in large part upon the advice of the Attorney General's office along with staff recommendations on the desirability of resolving this issue without litigation, thus avoiding costly and time consuming proceedings involved with litigation and greatly reducing uncertainty of future state liability. Although the above settlement is more than the state would likely have to pay if it prevailed in the litigation, it is substantially less than the amount the Lessees could command if they were victorious in total. The Department finds that the voluntary settlement of the field cost issue is in the best interest of the state. The Department further finds that the benefits which will accrue to the state from acceptance of this voluntary unit agreement outweigh the possible benefits that could be gained in an involuntary unit imposed by the Alaska Oil and Gas Conservation Commission under AS 31.05.110. Under AS 31.05.110(h), "the landowners' royalty share of the unit production allocated to each separately owned tract shall be regarded as royalty to be distributed to and among, or the proceeds of it paid to, the landowners, free and clear of all unit expense and free of any lien for it." While AS 31.05.110(h) applies to units formed under AS 38.05.180 as well as to involuntary units imposed under AS 31.05.110 by the reference in AS 31.05.110(q), AS 31.05.110(h) applied only to involuntary units at the time the Kuparuk DL-1 leases were issued. Therefore, the applicants have asserted that this provision regarding the landowners' non-obligation to pay unit expense is not applicable to this voluntary unit. While it is possible that the AOGCC would find the state has no liability for Kuparuk field costs in an involuntary unit, it is uncertain whether the other negotiated benefits, which are enumerated in this Decision, could be retained in an involuntary unitization.

Article 7.7 provides for various state options to increase or decrease its taking of royalty oil in kind. The individual leases provide that: "Whenever, at the option of Lessor, which may be exercised from time to time upon not less than six months' notice to Lessee, Lessor elects to take its royalty in kind, Lessee shall deliver free of charge (on said land or at such place as Lessor and Lessee mutually agree upon) to Lessor or to such individual, firm, or corporation as Lessor may designate all royalty oil and/or gas produced and saved from said land...." Article 7.7 implements this taking-in-kind option for unit production. Of particular interest is the expansion of the six month notice provision from that of the original lease language to provide for an increase or a decrease in in-kind taking on less than six months' notice. The Unit Agreement now provides that the state may make a 10% change in its nominations on 90-day notice, and a 2500-barrel-per-day change on 30-days' notice. The state may exercise these nomination rights only once every 90 or 30 days, respectively.

The lessees have previously argued that the state's right to take royalty in kind is limited to only taking all or none of the production, and not an intermediate percentage or amount. The state disagreed, and the first sentence of Article 7.7 provides that despite the disagreement under the individual lease provisions, the state may take all or a specified percentage of its royalty in kind under the six-month notice provision. As a matter of clarification, there is a possible reading of Article 7.7 which would limit the frequency of the state's using the six month notice to once only every six months. It is the understanding of the state and the parties that this is not the meaning or intent of the parties. Instead, the limitation expressed by the sentence "The State may make only one change in nomination during the above periods" only applies to the 90-and 30-day nomination rights. The frequency with which the state can use the six month nomination rights is not limited by Article 7.7. If the interpretion limiting the six-month notice was intended, this Unit Agreement would not adequately protect the state nor would it be in the state's best interest. The ability of the state to take its royalty in kind is a central theme in the state's oil policy, and is a statutory preference. See AS 38.05.182.183. Limiting the six-month nomination right to once every six months would severely hamper, and might possibly prevent, effective in-kind takings of royalty oil. Such a limitation would not be in the state's best interest.

Article 7.8 of the Applicant's form is similar to 7.9 of the standard state form. Eighty percent (80%) has been placed in the blanks of the standard state form as a fair and equitable percentage in this case for recoupment of certain outside substances which are injected into the Reservoir. This is also the same amount specified in the Prudhoe Bay Unit Agreement.

Article 7.9 of the Kuparuk River Unit Agreement and Article 7.10 of the state form are substantially similar; however, references directly applicable to net profit share leases in the standard state form have been deleted in the Kuparuk River Unit form.

Article 7.10 of the Applicant's form recognizes the separate Emergency Storage Agreement set out in Appendix II to the Unit Agreement.

Overall, in this case, the changes to Article 7 are acceptable considering the language in the original leases, the type of leases involved, the advantages of entering into a voluntary unit agreement, and the negotiation and compromise necessary in arriving at a voluntary settlement.

H. Article 8

Article 8 of the Kuparuk River Unit Agreement and the standard state form are substantially similar. However, the last sentence in Article 8.2 of the Kuparuk River Unit form indicates that if a facility is partially used for unit operations and partially used for other (non-unit) operations, any royalty (oil or gas) used within that facility shall be properly apportioned and payable to the state on the substances utilized by the non-unit operations. The Kuparuk Pipeline Company will be utilizing up to 20% of the power generation facility to generate the necessary power to assist in the transportation of the oil down the Kuparuk Pipeline. This use of fuel (royalty) will not be considered for unit operations. This provision allows

some joint sharing of facilities by non-unit entities and at the same time protects the state's royalty interest. This provision is accepted.

I. Article 12

Article 12 of the standard state form and Article 12 of the Kuparuk River Unit Agreement are the same with the exception of the last phrase, which indicates that upon application to the Commissioner, seasonal restrictions on operations or production specifically required or imposed as a condition of a Unit Plan of Operations may be considered as suspension of operatins or production ordered pursuant to law or prevention due to Force Majeure. This is an acceptable provision in light of the commitments made by the Working Interest Owners in the Unit Plan of Development since there are certain time constraints on meeting the provisions of that plan.

J. Article 14

Article 14 of the standard state form and Article 14 of the Kuparuk River Unit Agreement are the same with the exception of the salvaging of equipment and rehabilitation upon termination section. In that section, the standard state form indicates that the Unit Operator shall salvage and remove all unit equipment within one year and rehabilitate the Unit Area to the satisfaction of the Commissioner within one year after that date. The Working Interest Owners have suggested modifications of this to allow for a three-year period to remove and salvage the unit equipment and an additional three years to rehabilitate the Unit Area. The Department believes that in this case considering the amount of equipment involved and the particular climate and environment that one year for salvaging and removal of equipment, which was transported and installed in the Unit Area over some thirty years, and one year to rehabilitate the Unit Area is too restrictive and therefore, accepts longer time periods to ensure that the unit equipment is properly salvaged and removed and the Unit Area properly rehabilitated to the satisfaction of the Commissioner.

IV. FINDINGS AND DECISION

Considering the facts and considerations discussed in this finding and the administrative record, I find:

1. Approval of the Kuparuk River Unit Agreement is necessary and advisable in the public interest. The modifications proposed to the standard state Unit Agreement form are necessary and advisable in order to allow the state and the lessees to enter into a voluntary agreement. As with any negotiated agreement, the final settlement represents a departure from each party's perception of its ultimate legal rights. In deciding to approve this Unit Agreement, the department relied in large part upon the advice of the Attorney General's office along with staff recommendations on the desirability of resolving this issue voluntarily.

2. Lessees have been diligent in exploring and developing the Unit Area.

3. Lessees' Plan of Development for the Kuparuk River Reservoir provides for diligent development and production of hydrocarbons including plans for secondary recovery. Lessees' Plan of Development also provides for adequate exploration and analysis of other potential hydrocarbon zones in the Unit area.

4. The economic benefits to the state far outweigh the economic costs to the state. Settlement of the "field cost" issue through a field cost agreement eliminates the need for lengthy and costly litigation and associated uncertainty. Agreement to an emergency storage agreement greatly enhances the state's ability to sell oil in-kind, and expansion of the in-kind taking (nomination) provisions will also benefit the state when royalty oil and gas are taken in-kind. By agreeing to rely on the outcome of the Prudhoe Bay Unit litigation (Amerada Hess) with respect to valuation of royalty, the state also foregoes additional litigation. This is desirable since the issue is the same for both the Kuparuk and Prudhoe Bay Units.

5. Approval of the Unit Agreement will provide for the increased conservation of all natural resources, including hydrocarbons, gravel, sand, water, wetlands and other valuable habitat.

6. Approval of the Unit Agreement will prevent and assist in preventing the waste of oil and gas and reasonably increase the probability of recovering substantially more oil and gas from the Unit Area.

7. The unitized development and operation of the tracts will substantially reduce the amount of surface lands and fish and wildlife habitat that would otherwise be used if the oil and gas leases were to be developed and operated on a non-unitized basis. This reduction in the impact on the environment and on subsistence activity is in the public interest. However, some environmental impact is still likely as a result of oil and gas development and production. Development will proceed according to the general Plan of Development set forth in the Unit Agreement. Prior to undertaking any specific operations, a Unit Plan of Operations must be submitted to the department for review and approval. Mitigating measures, if necessary, can be imposed through any Plan of Operations. The degree of environmental impact likely to result will be determined by the success and adherence to these mitigating measures. The department will enforce any mitigating measures that are attached to a Plan of Operations.

   In an effort to increase the effectiveness of mitigating measures and to enable resource agencies and other interested parties to be better informed in responding to future development proposals, the Unit Operator shall meet with resource agencies and other interested parties to discuss current activity and future development plans at least once annually, and if requested by the Division of Minerals and Energy Management, an additional meeting will be held. The Unit Operator shall present up-to-date plans for

the design, construction and location of flowlines, roads, pads, gravel extraction areas, water sources, and other facilities. Annual meetings of this type were initiated by ARCO, and because of their beneficial nature, the department requests that they continue.

In addition, the Unit Operator shall continue to cooperate with the Alaska Department of Fish and Game in an effort to assess the impact of operations on caribou that utilize the Unit Area and formulate reasonable measures to reduce these impacts.. In addition to this overall cooperation, the Unit Operator shall continue to fund the second year of its three-year study of caribou response to the pipeline/road complex in the Kuparuk Oil Field. If, after the second year, the project researchers find that the continuation of the study into the third year is needed, funding of the study will continue into the third year. If west-to-east flowlines are constructed from Central Production Facility 2 to Kupaurk Drill Site 2D, the Unit Operator also shall monitor caribou activity in the vicinity of the proposed flowlines and drill pad prior to construction of the flowlines and for one summer season thereafter. Also, at least three months prior to the date when approval of the Plans of Operations for any pipelines in Phase III is desired, the Unit Operatior is strongly encouraged to submit detailed pipeline elevation profiles indicating the pipeline height above the tundra surface for all pipeline approvals sought.

The surface management plan proposed by the Department of Fish and Game and others was given consideration, but it was felt that many, if not most of the objectives of such a plan could be acheived through the annual meeting and update, the caribou research requirements, and the review and approval of Unit Plans of Development and Unit Plans of Operations by the Department of Natural Resources.

8. Approval of this Unit Agreement will not limit or diminish access to public and navigable waters beyond any limitations (if any) already contained in the oil and gas leases covered by the Unit Agreement.

9. The Unit Agreement will equitably and adequately protect all parties in interest, including the State of Alaska. Each present and prospective party to the Unit Agreement is a holder of an Alaska oil and gas lease, or interest therein. The signatories to the Unit Agreement hold approximately 98% of the ownership interest in the Unit Area. The signatories to the Unit Agreement hold 100% of the ownership interest in the initial participating area. The parties holding the approximate 2% reservoir interest outside the initial participating area have agreed to join the Unit Agreement in the near future. None of the parties which have not joined the Unit Agreement as of this date object to approval of the Unit Agreement by the state.

Allocation of production and initial tract participation (Exhibit C to the Unit Agreement) is based on acceptable engineering and geological principles. While there are no net profit share leases currently included in the Unit Area, provisions have been included in the Unit Agreement which allow such leases to be committed in the future on terms that protect the state's interest. Production attributed to tract 22 (ADL 25633) is equitable. This tract has a discovery royalty application pending before the department.

10. Inclusion within the Unit Area of all hydrocarbon pools at all depths will further enhance the production and development of those pools and is, therefore, in the public interest.

11. The area contained within the Unit is proper, based on geologic and engineering data submitted to the department. Therefore, the public interest and the correlative rights of all parties are protected.

For these reasons and subject to the conditions noted I hereby approve the Kuparuk River Unit Agreement.

Kay Brown

Kay Brown, Director
Division of Minerals and Energy Management

3/26/82
Date

For
John W. Katz, Commissioner
Alaska Department of Natural Resources

Attachments:

1. Certification/Determination of Commercial Quantities
2. Letter from ARCO to Alaska Department of Law regarding settlement of field costs
3. Delegation of Authority from Commissioner to Director, Division of Minerals and Energy Management