

**KUPARUK RIVER UNIT**

**SECOND EXPANSION OF THE UNIT AREA  
SECOND EXPANSION OF THE KUPARUK PARTICIPATING AREA**

**DECISION AND FINDINGS OF THE COMMISSIONER  
ALASKA DEPARTMENT OF NATURAL RESOURCES**

**MAY 31, 1985**

AGO 1365540

## KUPARUK RIVER UNIT

### SECOND EXPANSION OF THE UNIT AREA SECOND EXPANSION OF THE KUPARUK PARTICIPATING AREA

#### I. INTRODUCTION AND BACKGROUND

The Kuparuk River Unit is an oil and gas unit located on the Alaska North Slope immediately west of the Prudhoe Bay Unit. It was approved by the Alaska Department of Natural Resources on March 26, 1982, effective retroactive to December 1, 1981.

The original application for the Kuparuk River Unit proposed the unitization of 100 State of Alaska leases, all of which were executed on 1963 Department of Lands (DL-1) lease forms. The original unit area consisted of approximately 237,776 acres, and contained about 30 exploratory wells and 40 development wells at the time of approval.

The Kuparuk River Unit Agreement was modelled after the State of Alaska's Standard Unit Agreement form, which provides for operation of the leases within the unit area as a single entity without regard to lease boundaries and diverse ownership of the leases. The unit is operated in conformance with annual plans of development and operation approved by the Department of Natural Resources. ARCO Alaska, Inc. is the Unit Operator of the Kuparuk River Unit.

On December 13, 1981, production commenced from the Kuparuk River Reservoir, the primary producing interval underlying the Kuparuk River Unit. Start-up production was about 100 thousand barrels of oil per day.

On March 26, 1984, the Department of Natural Resources approved an expansion of the Kuparuk River Unit Area to include all or portions of an additional 28 State of Alaska leases. The expanded unit area after this first expansion comprised approximately 294,986 acres. Five of the leases included in that expansion were leased in the State of Alaska Oil and Gas Lease Sale No. 31 (September, 1980), and reserved a net profit share of 30 percent to the State, as well as providing for a 20 percent royalty. The Department of Natural Resources approved the first expansion of the Kuparuk River Unit Area as submitted, conditional upon the subsequent submittal and approval of an amendment of the Kuparuk River Unit Agreement to accommodate the terms of the added Net Profit Share leases. This amendment was submitted to the Department on May 6, 1985, and was approved on May 17, 1985.

The Kuparuk Participating Area consists of the leases and portions of leases within the Kuparuk River Unit that have been determined to be underlain by hydrocarbons and capable of producing or contributing to production of hydrocarbons from the Kuparuk River Reservoir in paying quantities. Only leases that are either partially or wholly included within the Kuparuk Participating Area can have oil production from that reservoir allocated to them. Although there are apparently several prospective oil and/or gas reservoirs underlying the Kuparuk River Unit Area, the Kuparuk River Reservoir is the only hydrocarbon pool that is currently commercially productive. Other

potential reservoirs, such as the West Sak Formation, so far have not been determined to be capable of production of hydrocarbons in paying quantities.

The initial Kuparuk Participating Area was approved by the Department of Natural Resources on March 26, 1982, and was subsequently determined to be retroactive to December 1, 1981. The participating area was established simultaneous with and as a part of the original Kuparuk River Unit Agreement. The initial Kuparuk Participating Area was expanded on February 25, 1983 to include an additional two leases, for a total of all or portions of 63 leases comprising 125,796 acres, more or less.

## II. APPLICATION FOR SECOND EXPANSION OF KUPARUK RIVER UNIT AREA AND SECOND EXPANSION OF THE KUPARUK PARTICIPATING AREA

On February 15, 1985, ARCO Alaska, Inc., the Unit Operator, on behalf of itself and ten other Working Interest Owners, made an application for a second expansion of the Kuparuk River Unit Area to encompass all or portions of an additional five leases comprising 12,735 acres, for a total expanded Unit Area of 307,721 acres. Other Working Interest Owners include Amerada Hess Corporation, Amoco Production Company, BP Alaska Exploration, Inc., Chevron U.S.A., Inc., Exxon Corporation, Gulf Oil Company, Mobil Oil Company, Phillips Petroleum Company, Sohio Alaska Petroleum Company, and Texaco, Inc. Four of the five leases proposed to be included within the Kuparuk River Unit Area as a result of this second expansion are Net Profit Share leases leased in the State of Alaska Oil and Gas Lease Sale No. 39 (May, 1983). These leases provide for a 30 percent net profit share and 12.5 percent royalty to the State.

This expansion of the Kuparuk River Unit Area would conform and modify the individual oil and gas leases to be added to the unit so that development of the area could be conducted on a unit-wide basis rather than on a lease-by-lease basis. Approval of the expansion would extend the joint, cooperative development of the unit area in conformance with approved Unit Plans of Development and Operation.

An application to expand the Kuparuk Participating Area was submitted to the Department of Natural Resources at the same time as the application to expand the Kuparuk River Unit Area. This application for expansion of the participating area proposes to add all or portions of 19 oil and gas leases containing 18,033 acres to the Kuparuk Participating Area, thereby expanding the Kuparuk Participating Area to 143,830 acres, more or less. Three of the leases proposed to be added to the Kuparuk Participating Area in this expansion are Net Profit Share leases.

Public notice of the proposed Second Expansion of the Kuparuk River Unit Area and Second Expansion of the Kuparuk Participating Area was published in the Anchorage Daily News on March 5, 1985 and in The Tundra Times on March 11, 1985. Copies of the proposed expansions were also provided to interested parties in conformance with 11 AAC 83.311, as well as to the Alaska Department of Environmental Conservation, the Alaska Department of Fish and Game, and the Alaska Oil and Gas Conservation Commission. No comments have been received on the proposed applications.

Upon review of the geological, geophysical, and engineering data submitted in support of the proposed expansion, the Department of Natural Resources determined that a portion of the lands proposed to be included within the second expansion of the Kuparuk River Unit Area was not justified for inclusion within the unit under the terms of the applicable regulations governing formation and expansion of an oil and gas unit (11 AAC 83.301 - 11 AAC 83.395). As a result, the State is willing to consider the expansion of the Kuparuk River Unit Area to include only four of the five leases originally proposed for inclusion in the unit.

Both the Second Expansion of the Kuparuk River Unit Area and the Second Expansion of the Kuparuk Participating Area are proposed to be effective as of 12:01 a.m. June 1, 1985. Under the proposed production allocation, the volume of oil to be allocated to net profit share leases is approximately 1.04 percent of the total Kuparuk River Reservoir production, or approximately 2150 barrels of oil per day, based on current production levels.

Under the Second Expansion of the Kuparuk Participating Area, the Kuparuk Participating Area will be the first participating area in the State to have oil production actually allocated to such leases. As of June 1, 1985, hydrocarbons produced from the Kuparuk River Unit will be deemed to have been produced from Net Profit Share leases.

### III. GEOLOGICAL AND ENGINEERING CHARACTERISTICS, AND PREVIOUS EXPLORATION OF THE PROPOSED EXPANSION AREAS

The Kuparuk River Unit Operator submitted a net hydrocarbon pay contour map and confidential data from the Oliktok Point Nos. 2 and 2A wells in support of the applications for expansion of the Kuparuk River Unit Area and the Kuparuk Participating Area. The Unit Operator and certain other Working Interest Owners also met with Division of Oil and Gas staff members to discuss confidential and nonconfidential information applicable to the proposed expansion area. In addition to the Oliktok Point Nos. 2 and 2A wells, the Union East Harrison Bay State No. 1 well was drilled within the proposed expansion area, and was suspended in 1977. Although that well was essentially a dry hole, the data available from the well do not condemn the entire lease.

The geological, geophysical, and engineering data presented to the State are sufficient to warrant the expansion of the Kuparuk River Unit Area to include all or portions of ADLs 25222, 355023, 355024, and 355030; however, currently existing data do not warrant the inclusion of ADL 355032 based on the considerations of 11 AAC 83.356(a). Therefore, no portion of ADL 355032 will be incorporated into the unit at this time, although that lease may be considered for inclusion in the unit at a later date when more information concerning underlying hydrocarbons become available.

### IV. APPLICANTS' PLANS FOR EXPLORATION OR DEVELOPMENT OF THE EXPANSION AREAS

Although production from the Kuparuk River Reservoir is to be allocated to the proposed expansion area leases as of June 1, 1985, the applicants have not provided the State with plans for further exploration or development of the

proposed expansion area. Such plans for further exploration or development of the area will need to be addressed in future Unit Plans of Development and Operation, and updates to such Plans.

#### V. DISCUSSION OF DECISION CRITERIA

In accordance with the applicable regulations (11 AAC 83.301 -- 11 AAC 83.395), the Commissioner will approve an expansion of an existing oil and gas unit if she finds that such expansion is necessary or advisable to protect the public interest. In determining whether a proposed expansion is in the public interest, the Commissioner will consider the following criteria: (1) the conservation of all natural resources; (2) the prevention of economic and physical waste; and (3) the protection of all parties of interest, including the State. A discussion of these criteria follows.

(1) The Conservation of All Natural Resources. Unitized development of and production from a reservoir is universally recognized as a prudent conservation mechanism. By unitizing a field-wide area, drilling operations can be optimized and surface impacts can be reduced. Unitized development can also provide a structure for several parties to combine their expertise and resources to develop and produce an area that might be beyond the capabilities of a single party to develop or produce, especially if the prospective area is only marginally economic.

There are sufficient geological, geophysical, and engineering data to indicate the probable existence of economically producible hydrocarbon reserves underlying the area proposed to be added to the Kuparuk River Unit Area. In particular, portions of the areas underlying leases ADL 25222, ADL 355023, ADL 355024, and ADL 355030 appear to be capable of contributing to the production of hydrocarbons from the Kuparuk River Reservoir in paying quantities. There is also considerable evidence that these reserves would only be marginally economic under current technological and market conditions, and in fact may never meet a strict "commercial quantities" definition if developed on a lease-by-lease basis. As a result, the inclusion of these tracts into the producing Kuparuk River Unit does promote the conservation of all natural resources by allowing production and cost sharing to be extended to these tracts through the Unit Agreement and Unit Operating Agreement.

(2) The Prevention of Economic and Physical Waste. Assuring proper allocation of hydrocarbons to each affected lease is only one concern in resource allocation, as economic and physical waste can still occur if equitable cost sharing formulas and integrated exploration and development plans for the affected areas do not exist. Both of these components are necessary to ensure that physical and economic recovery from all reservoirs underlying the unit area is maximized.

As noted above, the benefits of unitization are especially applicable to marginally economic areas, particularly near the periphery of reservoirs. In such areas, added reserves that would not economically be producible on their own are often gained through unitized operations. Capital savings as a result of the consolidation of reservoir evaluation and management and elimination of the need for duplication of surface facilities allows less profitable areas of

a reservoir to be tested, developed, and produced. Pressure maintenance and secondary and tertiary recovery operations applied on a reservoir-wide basis also increase ultimate recovery and improve marginal development economics.

In the proposed expansion, the State believes that prevention of economic waste will be accomplished by the accelerated development and production of hydrocarbon reserves if the affected tracts are committed to the Kuparuk River Unit. The operation of the expanded area as a part of the Kuparuk River Unit will, therefore, significantly enhance the probability of early production from this area.

(3) The Protection of All Parties of Interest, Including the State. A primary goal of unitization is the protection of all parties having an economic interest in one or more common hydrocarbon accumulations. Unitization conserves natural resources and prevents economic waste by minimizing the many competing interests for delineation and operation of common reservoirs within the area, while retaining separate interests and accounts for equitable sharing of costs and benefits based on original ownership. By ratification of the Unit Agreement, all parties are assured an allocation of costs and production commensurate with the value of their leases.

The expansion of the Kuparuk River Unit extends these benefits and protection to leases considered likely to be capable of contributing to production from the Kuparuk River Reservoir. The State's economic interest is protected by maximizing any physical recovery of hydrocarbons that may exist in the area. Maximizing hydrocarbon recovery in turn assures that the production-based revenue accruing to the State is also maximized. Accelerated development of the affected leases will contribute to the economic well-being of the State as a result of the expedited receipt of the revenues involved, and the additional subsurface information obtained due to early development and production of the area. Unitized operations within the expansion areas also minimize impacts to the area's cultural, biological, and environmental resources.

## VI. FINDINGS AND DECISION

Considering the facts discussed in this document and the administrative record, I hereby find:

1. Based on the available geologic and engineering data submitted to the State and discussions with the Unit Operator, the expansion of the Kuparuk River Unit Area as originally proposed has not been adequately justified. However, an expansion to include a lesser area is proper and justified. The proper area for expansion of the Kuparuk River Unit Area based upon currently available data consists of the following lands:

T13N, R9E, U.M., Sections 1 - 12: all (ADLs 355023 and 355024); T13N, R8E, U.M., Sections 1, 2, 3, 10, 11, 12, and 15: all (ADL 355030), and Section 14: all (ADL 25522).

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The approved Kuparuk River Unit Area as of June 1, 1985 shall be as set out in Attachment I to this Decision and Findings.

The Kuparuk River Unit Agreement provides for further expansions and contractions of the unit area in the future as warranted by additional information. Therefore, the public interest and the correlative rights of all parties affected by this expansion, including the State, are protected.

2. Approval of this expansion of the Kuparuk River Unit Area is necessary and advisable to protect the public interest. Lessees' ratification of the Unit Agreement will ensure a fair and equitable return to the State from any production of hydrocarbons from the expanded unit area.
3. Simultaneous with this expansion of the Kuparuk River Unit Area, the Kuparuk Participating Area is being expanded to include the following lands :

T10N, R8E, UM, Sec. 7: SE/4; Sec. 17: NW/4.

T11N, R8E, UM, Sec. 1: NW/4; Sec. 2: all; Sec. 3: NE/4, SE/4; Sec. 10: all; Sec. 11: NE/4, NW/4, SW/4; Sec. 14: NW/4; Sec. 15: all; Sec. 16: NE/4, SE/4; Sec. 21: all; Sec. 22: NE/4, NW/4, SW/4; Sec. 28: NE/4, NW/4, SW/4; Sec. 29: SE/4; Sec. 32: SW/4, NE/4.

T11N, R11E, UM, Secs. 5, 6, 7, 8: all.

T12N, R8E, UM, Sec. 2: NW/4, SE/4, SW/4; Sec. 11: all; Sec. 13: SW/4; Sec. 14: all; Sec. 23: all; Sec. 24: NW/4, SW/4; Sec. 25: NW/4, SW/4; Sec. 26: all; Sec. 35: all; Sec. 36: NW/4, SW/4.

T12N, R10E, UM, Sec. 9: NW/4, SW/4.

T13N, R8E, UM, Sec. 12: SE/4; Sec. 13: SW/4, NE/4; Sec. 23: SW/4, NE/4; Sec. 26: NW/4; Sec. 34: SE/4, NE/4.

T13N, R9E, UM, Sec. 3: SW/4, Sec. 4: all; Sec. 5: all, excluding that portion of USS 4275 within Sec. 5; Sec. 6: SE/4; Sec. 7: all, excluding that portion of USS 4275 within Sec. 7; Sec. 8: all, excluding that portion of USS within Sec. 8; Secs. 9, 10: all.

The approved allocations of the Kuparuk Participating Area as of June 1, 1985 shall be as set out in Attachment II to this Decision and Findings.

4. Within 60 days of the Effective Date of this Decision and Findings, the Unit Operator shall submit to the State updated Exhibits A, B, C, D, and F to the Kuparuk

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T11N, R11E, UM, Secs. 5, 6, 7, 8: all.

T12N, R8E, UM, Sec. 2: NW/4, SE/4, SW/4; Sec. 11: all; Sec. 13: SW/4; Sec. 14: all; Sec. 23: all; Sec. 24: NW/4, SW/4; Sec. 25: NW/4, SW/4; Sec. 26: all; Sec. 35: all; Sec. 36: NW/4, SW/4.

T12N, R10E, UM, Sec. 9: NW/4, SW/4.

T13N, R8E, UM, Sec. 12: SE/4; Sec. 13: SW/4, NE/4; Sec. 23: SW/4, NE/4; Sec. 26: NW/4; Sec. 34: SE/4, NE/4.

T13N, R9E, UM, Sec. 3: SW/4, Secs. 4, 5: all; Sec. 6: SE/4; Secs. 7, 8, 9, 10: all.

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REVISED MAY 29, 1987  
Arlene J. McIntyre



River Unit Agreement reflecting the approved allocations as set out in Attachments I and II to this Decision and Findings.

5. Diligent exploration and delineation of all reservoirs underlying the proposed expansion area will be conducted by the Unit Operator under the Kuparuk River Unit Plans of Development and Operation approved by the State.
6. The economic benefits to the State as a result of unitized development and production of the expanded Kuparuk River Unit Area outweigh the economic costs to the State in approving such expansion.
7. Expansion of the Kuparuk River Unit Area to include the additional leases will provide for the increased conservation of all natural resources including hydrocarbons, gravel, sand, water, wetland, and other valuable habitat.
8. Expansion of the Kuparuk River Unit to include the additional leases will reduce the amount of surface lands and fish and wildlife habitat that would otherwise be used if the area were to be explored and developed on a lease-by-lease basis. This reduction in the impact on the environment and on subsistence activity in the area is in the public interest.
9. Prior to the construction of permanent facilities for development of or production from any of the tracts added to the Kuparuk River Unit Area through this expansion, the Working Interest Owners will present to the Department of Natural Resources and the Department of Fish and Game a document summarizing caribou usage on the expanded unit area. All Plans of Development and Operation, and updates of such Plans, for the expanded unit area must take such caribou usage patterns into account. Considerations of caribou usage in the Kuparuk River Unit Plans of Development and Operation and updates to such Plans, should be integrated with caribou usage considerations for unit areas adjacent to the Kuparuk River Unit Area to the extent possible.
10. Preservation of sensitive wetland habitat shall be addressed in all Kuparuk River Unit Plans of Development and Operations, and updates to such Plans, with emphasis being placed on minimizing cross-drainage problems.
11. At this time, the Second Expansion of the Kuparuk River Unit Area is consistent with the Coastal Zone Management Plan.

12. Expansion of the Kuparuk River Unit to include the additional leases will not limit or diminish access to public and navigable waters beyond any limitations already contained in the oil and gas leases proposed to be added to the unit area.
13. This expansion of the Kuparuk River Unit Area will be effective as of 12:01 a.m. June 1, 1985.

For these reasons and subject to the conditions and limitations noted, I hereby approve the Second Expansion of the Kuparuk River Unit and the Second Expansion of the Kuparuk Participating Area.

Esther C. Wunnicke  
Esther C. Wunnicke, Commissioner  
Alaska Department of Natural Resources

May 31, 1985  
Date

Attest: Jay Brown

Date: May 31, 1985

Attest: Catherine McKay

Date: 5-31-85

- Attachments: I. Approved Kuparuk River Unit Area, June 1, 1985
- II. Approved Production and Cost Allocations for Second Expansion of the Kuparuk Participating Area, June 1, 1985