

KUPARUK RIVER UNIT

APPLICATION FOR THE
SIXTH EXPANSION OF THE KUPARUK
PARTICIPATING AREA

DECISION AND FINDINGS OF THE COMMISSIONER
ALASKA DEPARTMENT OF NATURAL RESOURCES

MAY 4, 1992

KUPARUK RIVER UNIT

SIXTH 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. This unit was approved by the Alaska Department of Natural Resources on March 26, 1982, effective retroactive to December 1, 1981.

The Kuparuk River Unit Agreement was modeled 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 Formation, the primary producing interval underlying the Kuparuk River Unit. Start-up production was about 100,000 barrels of oil per day.

The Kuparuk Participating Area consists of the leases and portions of leases within the Kuparuk River Unit that have been determined to be capable of producing or contributing to production of hydrocarbons from the Kuparuk River Formation in paying quantities. Only leases that are either partially or wholly included within the Kuparuk Participating Area can have oil production from the Kuparuk River Formation allocated to them. Although there are apparently several prospective oil and/or gas reservoirs underlying portions of the Kuparuk River Unit Area, the Kuparuk River Formation is the only hydrocarbon pool that is currently in commercial production. Other potential reservoirs, such as the West Sak sands, 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; the approval was subsequently made retroactive to December 1, 1981. The initial participating area was established simultaneously with, and as a part of, the original Kuparuk River Unit Agreement. The Kuparuk Participating Area presently encompasses 169,110 acres, more or less.

II. APPLICATION FOR THE SIXTH EXPANSION OF THE KUPARUK PARTICIPATING AREA

On November 27, 1991, ARCO Alaska, Inc., the Unit Operator, on behalf of itself and the Kuparuk Working Interest Owners, Amerada Hess Corporation, Amoco Production Company, BP Exploration (Alaska) Inc., Chevron U.S.A., Inc., Exxon Corporation, Mobil Oil Company, Texaco, Inc. and Union Oil Company of California, submitted an application to expand the Kuparuk Participating Area to encompass certain additional acreage within the Kuparuk River Unit purported to be capable of producing or contributing to the production of hydrocarbons in paying quantities. This application was submitted pursuant to 11 AAC 83.351(c) and Section 6.2 of the Kuparuk River Unit Agreement.

The proposed sixth expansion of the Kuparuk Participating Area would add portions of six individual oil and gas leases, ADL 25668 (Tract 87), ADL 25605 (Tract 88), ADL 25604 (Tract 89), ADL 25603 (Tract 90), ADL 25608 (Tract 95), and ADL 25607 (Tract 96) totaling approximately 5,920 acres to the existing participating area. The expansion of the Kuparuk Participating Area to include parts of these six leases would result in a total expanded participating area of approximately 175,030 acres.

The proposed effective date of the Sixth Expansion of the Kuparuk Participating Area is the first day of the month following approval by the Commissioner of the Department of Natural Resources, which is 12:01 a.m. June 1, 1992.

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

The Division of Oil and Gas reviewed the confidential geological, geophysical, engineering and well information in support of the application proposing expansion of the Kuparuk Participating Area (KPA). Staff members of the division also met with ARCO on March 25, 1992 to discuss the geologic, geophysical, and engineering data submitted with the application.

The information reviewed by the division included composite A-4/A-5 Sands net pay maps presented by both ARCO and Unocal, the geologic and production data from the development wells at Drillsite 2K, geologic well data from Drillsites 1L, 2E, 2F, and 2G as well as the geologic and engineering information from wells West Sak #13, West Sak #15, West Sak #20, KRU 21-10-8 #1, and KRU 36-10-7 #1 (the Bermuda Well). The KRU 21-10-8 #1 well is located outside of the current KPA, but within the proposed expansion acreage. West Sak #13, West Sak #20, and KRU 36-10-7 #1 (the Bermuda Well) are outside of the current KRU area. ARCO's application was evaluated on the relevant geologic and engineering information from these

wells to determine the appropriateness of including the proposed expansion acreage into the KPA.

Upon review of the geological and engineering data submitted in support of the proposed sixth expansion of the KPA, the Department of Natural Resources determines that the inclusion of the following lands within the participating area pursuant to the Kuparuk River Unit Agreement, the terms of the applicable regulations governing formation and expansion of oil and gas units (11 AAC 83.301 - 11 AAC 83.395), and the terms and conditions under which these lands were leased from the State of Alaska is justified:

ADL 25668 (Tract 87): SW1/4 of Sec. 18, T10N R9E, U.M.;

ADL 25605 (Tract 88): S1/2 of Sec. 13, S1/2 of Sec. 14, All of Sec. 23, and NW1/4 of Sec. 24, T10N, R8E, U.M.;

ADL 25604 (Tract 89): S1/2 of Sec. 15, S1/2 of Sec. 16, All of Secs. 21 and Sec. 22, T10N, R8E, U.M.;

ADL 25603 (Tract 90): S1/2 of Sec. 17, S1/2 and NE1/4 of Sec. 20, T10N, R8E, U.M.;

ADL 25608 (Tract 95): All of Sec. 29, T10N, R8E, U.M.;

ADL 25607 (Tract 96): N1/2 of Sec. 27, and All of Sec. 28, T10N, R8E, U.M..

The department's examination of the geological and engineering characteristics of the actual reservoirs, the prior exploration activities in the area of concern, and other relevant factors, including all factors listed in 11 AAC 83.303(a) and (b) indicate that the proposed expansion lands are appropriate for inclusion within the Kuparuk Participating Area.

IV. FINDINGS AND DECISION

Considering the facts discussed in this document and the administrative record, I hereby make findings and impose conditions as follows:

1. Under 11 AAC 83.351(c), a participating area must be expanded to include acreage reasonably estimated through the use of geological, geophysical, or engineering data to be capable of producing or contributing to the production of hydrocarbons in paying quantities.

2. Under 11 AAC 83.303(c), the department will consider the factors specified in 11 AAC 83.303(a) and (b) when evaluating requests concerning participating areas.

3. The geological, geophysical and engineering data submitted by the applicants justify expanding the Kuparuk River Unit, Kuparuk Participating Area to include the following lands:

ADL 25668 (Tract 87): SW1/4 of Sec. 18, T10N R9E, U.M.;

ADL 25605 (Tract 88): S1/2 of Sec. 13, S1/2 of Sec. 14, All of Sec. 23, and NW1/4 of Sec. 24, T10N, R8E, U.M.;

ADL 25604 (Tract 89): S1/2 of Sec. 15, S1/2 of Sec. 16, All of Secs. 21 and Sec. 22, T10N, R8E, U.M.;

ADL 25603 (Tract 90): S1/2 of Sec. 17, S1/2 and NE1/4 of Sec. 20, T10N, R8E, U.M.;

ADL 25608 (Tract 95): All of Sec. 29, T10N, R8E, U.M.;

ADL 25607 (Tract 96): N1/2 of Sec. 27, and All of Sec. 28, T10N, R8E, U.M..

These lands contain 5920 acres, more or less.

4. The Kuparuk River Unit Agreement provides for further expansions and contractions of the participating area in the future as warranted on the basis of further drilling or based upon additional information. Therefore, this expansion continues to allow the Kuparuk River Unit Agreement to protect the public interest in conservation of resources and protection of economic and physical waste, and the correlative rights of all parties affected by the expansion, including the State.

5. 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, and D to the Kuparuk River Unit Agreement reflecting the approved expansion areas as set out in this Decision and Findings.

6. Diligent exploration and delineation of all reservoirs underlying the approved expansion area are to be conducted by the Unit Operator under the Kuparuk River Unit plans of development and operation approved by the State.

7. This expansion of the Kuparuk River Unit, Kuparuk Participating Area will be effective as of 12:01 a.m. June 1, 1992.

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



James E. Eason, Director
Division of Oil and Gas

May 4, 1992
Date

For: Harold C. Heinze, Commissioner
Alaska Department of Natural Resources

Attachment: Delegation of Authority from Commissioner, Alaska Department of Natural Resources, to Director, Division of Oil and Gas, dated March 19, 1992.

Kuparuk.6thKPAEXP.txt

DELEGATION OF AUTHORITY

With regard to the applications for the Fifth and Sixth Expansions of the Kuparuk River Unit, Kuparuk Participating Area, I hereby delegate to the Director of the Division of Oil and Gas my authority under 11 AAC 83.351 to approve/deny a participating area as well as my authority under 11 AAC 83.371 to approve/deny allocation of cost and production formulas.

Dated: 3/19/92
Juneau, Alaska



Harold C. Heinze, Commissioner
Alaska Department of Natural
Resources

KUPARUK RIVER UNIT

**APPLICATION FOR THE
FIFTH EXPANSION OF THE KUPARUK
PARTICIPATING AREA**

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

March 23, 1992

AGO 10166433

KUPARUK RIVER UNIT

FIFTH 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. This unit was approved by the Alaska Department of Natural Resources on March 26, 1982, effective retroactive to December 1, 1981.

The Kuparuk River Unit Agreement was modeled 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 Formation, the primary producing interval underlying the Kuparuk River Unit. Start-up production was about 100,000 barrels of oil per day.

The Kuparuk Participating Area consists of the leases and portions of leases within the Kuparuk River Unit that have been determined to be capable of producing or contributing to production of hydrocarbons from the Kuparuk River Formation in paying quantities. Only leases that are either partially or wholly included within the Kuparuk Participating Area can have oil production from the Kuparuk River Formation allocated to them. Although there are apparently several prospective oil and/or gas reservoirs underlying portions of the Kuparuk River Unit Area, the Kuparuk River Formation is the only hydrocarbon pool that is currently in commercial production. Other potential reservoirs, such as the West Sak sands, 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; the approval was subsequently made retroactive to December 1, 1981. The initial participating area was established simultaneously with, and as a part of, the original Kuparuk River Unit Agreement. The Kuparuk Participating Area presently encompasses 167,510 acres, more or less.

AGO 10166434

II. APPLICATION FOR THE FIFTH EXPANSION OF THE KUPARUK PARTICIPATING AREA

On November 22, 1991, ARCO Alaska, Inc., the Unit Operator, on behalf of itself and the Kuparuk Working Interest Owners, Amerada Hess Corporation, Amoco Production Company, BP Exploration (Alaska) Inc., Chevron U.S.A., Inc., Exxon Corporation, Mobil Oil Company, Texaco, Inc. and Union Oil Company of California, submitted an application to expand the Kuparuk Participating Area to encompass certain additional acreage within the Kuparuk River Unit purported to be capable of producing or contributing to the production of hydrocarbons in paying quantities. This application was submitted pursuant to 11 AAC 83.351(c) and Section 6.2 of the Kuparuk River Unit Agreement.

The proposed fifth expansion of the Kuparuk Participating Area would add parts of two individual oil and gas leases, ADL 25546 (Tract 25) and ADL 25549 (Tract 28), totaling 1,600 acres to the existing participating area. The expansion of the Kuparuk Participating Area to include these two leases would result in a total expanded participating area of approximately 169,110 acres.

The proposed effective date of the Fifth Expansion of the Kuparuk Participating Area is the first day of the month following approval by the Commissioner of the Department of Natural Resources, which is 12:01 a.m. April 1, 1992.

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

In 1990, two wells, 3G-21 and 3G-22, were drilled as tract operations from inside the present boundaries of the Kuparuk Participating Area to bottom hole locations within the proposed expansion acreage. After completion within the Kuparuk River Reservoir, both wells were hydraulically fractured, then flow tested to determine daily production rates. Well 3G-21 tested 1,650 barrels of oil per day; Well 3G-22 tested 990 barrels of oil per day.

In addition to the well test data, ARCO submitted the well logs from 3G -21 and 3G-22, well logs from other wells in the Drillsite 3G area, Kuparuk Formation stratigraphic sections, structure contour maps, and Kuparuk A and C Sand net pay maps applicable to the expansion area. Economic cash flow and discounted cash flow analyses for Tracts 25 and 28 unitized operations and development were also provide to the State as part of the expansion application.

Based upon the department's review of the geological, geophysical, economic and engineering data submitted in support of the proposed fifth expansion of the KPA, it is determined that portions of Tract

25 and Tract 28 are capable of producing or contributing to the production of hydrocarbons in paying quantities. The inclusion of portions of ADL 25546 (Tract 25) and ADL 25549 (Tract 28), as proposed, within the participating area pursuant to the Kuparuk River Unit Agreement, the terms of the applicable regulations governing formation and expansion of oil and gas units (11 AAC 83.301 - 11 AAC 83.395), and the terms and conditions under which these lands were leased from the State of Alaska is justified.

The department's examination of the geological and engineering characteristics of the actual reservoirs, the prior exploration activities in the area of concern, the applicants' plan of exploration or development of the area, and other relevant factors, including all factors listed in 11 AAC 83.303(a) and (b) indicate that the proposed expansion lands are appropriate for inclusion within the Kuparuk Participating Area.

IV. FINDINGS AND DECISION

Considering the facts discussed in this document and the administrative record, I hereby make findings and impose conditions as follows:

1. Under 11 AAC 83.351(c), a participating area must be expanded to include acreage reasonably estimated through the use of geological, geophysical, or engineering data to be capable of producing or contributing to the production of hydrocarbons in paying quantities.

2. Under 11 AAC 83.303(c), the department will consider the factors specified in 11 AAC 83.303(a) and (b) when evaluating requests concerning participating areas.

3. The geological, geophysical and engineering data submitted by the applicants justify expanding the Kuparuk River Unit, Kuparuk Participating Area to include the following lands:

ADL 25546 (Tract 25): E 1/2 of Sec. 22, T12N R8E,
U.M.;

ADL 25549 (Tract 28): All of Secs. 27 and 34,
T12N, R8E, U.M.;

These lands contain 1600 acres, more or less.

4. The Kuparuk River Unit Agreement provides for further expansions and contractions of the participating area in the future as warranted on the basis of further drilling or based upon additional information. Therefore, this expansion continues to allow the Kuparuk River Unit Agreement to protect the public interest in conservation of resources and

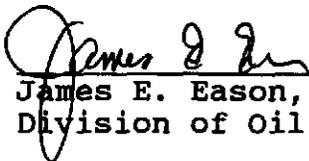
protection of economic and physical waste, and the correlative rights of all parties affected by the expansion, including the State.

5. 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, and D to the Kuparuk River Unit Agreement reflecting the approved expansion areas as set out in this Decision and Findings.

6. Diligent exploration and delineation of all reservoirs underlying the approved expansion area are to be conducted by the Unit Operator under the Kuparuk River Unit plans of development and operation approved by the State.

7. This expansion of the Kuparuk River Unit, Kuparuk Participating Area will be effective as of 12:01 a.m. April 1, 1992.

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


James E. Eason, Director
Division of Oil and Gas

March 23, 1992
Date

For: Harold C. Heinze, Commissioner
Alaska Department of Natural Resources

Attachment: Delegation of Authority from Commissioner, Alaska Department of Natural Resources, to Director, Division of Oil and Gas, dated March 19, 1992.

Kuparuk.5thKPAEXP.txt

AGO 10166437

DELEGATION OF AUTHORITY

With regard to the applications for the Fifth and Sixth Expansions of the Kuparuk River Unit, Kuparuk Participating Area, I hereby delegate to the Director of the Division of Oil and Gas my authority under 11 AAC 83.351 to approve/deny a participating area as well as my authority under 11 AAC 83.371 to approve/deny allocation of cost and production formulas.

Dated: 3/19/92
Juneau, Alaska



Harold C. Heinze, Commissioner
Alaska Department of Natural
Resources

AGO 10166438