Findings and Decision of the Director
of the Division of Oil and Gas

APPROVAL OF THE APPLICATION TO

REVISE THE WEST SAK PARTICIPATING AREA

OF THE

KUPARUK RIVER UNIT

Under a Delegation of Authority
from the Commissioner of the State Of Alaska
Department of Natural Resources

December 15, 2004

Table of Contents

I. SUMMARY

ConocoPhillips Alaska, Inc. (CPAI), as Kuparuk River Unit Operator applied to revise the existing West Sak Participating Area (WSPA). The approval of CPAI's application results in the contraction of the WSPA to exclude the lands which CPAI does not plan to develop in the foreseeable future and to include new leases to the east and south which CPAI has committed to develop.

CPAI submitted geotechnical and engineering data that justifies revisions to the WSPA. The revised WSPA includes the area proposed by CPAI because that area has been shown to be "reasonably known to be underlain by hydrocarbons and known or reasonably estimated … to be capable of producing or contributing to production of hydrocarbons in paying quantities." 11 AAC 83.351(a) and CPAI has committed to develop the resource.

Effective November 1, 2004, the Division of Oil and Gas (Division) approves CPAI's application to revise the WSPA. The Division also approves the tract allocation schedule and WSPA areal extent, Exhibits C and D to the Kuparuk River Unit Agreement submitted with the application. The tract allocation schedule equitably allocates production and costs among the leases in the WSPA within the Kuparuk River Unit (KRU).

II. INTRODUCTION AND BACKGROUND

The KRU Owners have collected West Sak Reservoir delineation data since the 1980's. The KRU Owners selectively logged over 300 Kuparuk Participating Area (KPA) wells and cored KPA development wells to evaluate the West Sak within the KRU. From September 1984 through December 1986, a West Sak Pilot Implementation and Operation project was conducted south of Drillsite 1D to verify West Sak producing rates, and evaluate and confirm West Sak development potential.

From January 1987 through December 1997, all West Sak wells were shut-in and there was no production for this period. In April 1989, a dedicated well, WS1-01 was drilled, completed and tested to evaluate future development potential of the West Sak Reservoir in the Drillsite 1D area. A small-scale waterflood project was scheduled to follow the WS1-01 well, but economic circumstance in late 1989 caused the waterflood project to be deferred. By 1989, there were approximately 21 delineation wells and 13 production tests to evaluate the reservoir.

In 1997 the KRU Owners made the decision to continue development of the West Sak Formation and applied to form a participating area (PA). The development plan called for a phased approach. Phase-I was to consist of approximately 50 wells (31 producers and 19 injectors) at KRU Drillsites 1C and 1D. Phase-I drilling was to be completed by the end of 1998. The KRU Owners estimated recovery for Phase-I to be 51 million barrels of oil. Subsequent phases would depend on the results of Phase-I and were left undefined.

On December 18, 1997, the Division approved the WSPA to include 12 leases, but production was initially only allocated to ADL 25650 (Drillsite 1D). The Division permitted the whole area to be included in the WSPA under two conditions. The first condition required the KRU Operator to revise the tract allocation schedule from time to time as more wells are drilled and brought into operation from the tracts or drilling blocks. The second condition required the WSPA to automatically contract to those tracts or parts of tracts receiving allocated production or tracts which have active production or injection wells on December 1, 2002.

The Division proposed this approach for several reasons. First, the lands in the proposed WSPA were already included in the KPA and are therefore held by production from the KPA. Second, including all the proposed lands in the WSPA at that time was meant to reduce the administrative burden to the state and the working interest owners of multiple PA expansion applications in the future. Finally, there was no economic harm associated with including the proposed lands within the WSPA at that time. All the tracts had the same royalty rates and royalty valuation issues associated with the leases.

Production from the Phase I drilling began in December 1997 and by January 1, 1999 it was clear that Phase I was not progressing as planned. Only 12 wells were on production, much less than the planned 31 production wells, but much was being learned and many new ideas were being investigated in order to make this resource economic.

On November 8, 2000, the KRU Operator submitted a revised tract allocation schedule, Exhibit C to the KRU Agreement for the WSPA. The new schedule expanded the allocated production to include the initial West Sak Development at Drill Site 1D as well as the 2001 Drilling Program at Drill Site 1C. The development of Drill Site 1C was scheduled for March 1, 2001 with first production anticipated for August 2001. The schedule was approved by the Division and the first production from the new area was on November 22, 2001. The new schedule split the production 50/50 between ADL 25649 and ADL 25650.

On July 2, 2002, the KRU Operator applied to expand the KRU due south of the WSPA. This expansion was proposed in order to bring four new leases into the unit and facilitate the future expansion of the WSPA to the south. The leases' primary terms were due to expire on January 31, 2003. The operator believed that the area could be developed economically using long multilateral horizontal producers with alternating rows of long undulating horizontal injectors.

The KRU expansion was approved and effective on October 1, 2002 with conditions. The operator committed to pay $7,842/tract/yr for each of the four tracts in the expansion area (Bid Deferment Payments) until the tracts were included in a PA and drill at least two wells (Expansion Drilling Commitments) in the expansion area by June 1, 2004. Any leases in the expansion area that are not included in a PA by June 1, 2007 will automatically contract from the KRU. The well spacing of 160 acres around each well along with paying quantities and engineering/geologic/geophysical data will be the basis for determining the portion of each lease to be included in a PA.

In the spring of 2003, the Operator notified the Division of the plan to drill two horizontal producers and one horizontal injector to the West Sak Formation that would begin inside the WSPA and extend to the north outside the WSPA onto ADL 25638. The plan was to test the wells for a period and apply to expand the WSPA if the project was successful. The Division approved the operation.

May 27, 2003, CPAI as Operator on behalf of the KRU working interest owners (BP Exploration (Alaska) Inc, Union Oil Company of California, Chevron U.S.A. Inc, and Exxon Mobil Alaska Production, Inc. committed in writing to fulfill the Expansion Drilling Commitments, by June 1, 2004.

On November 18, 2003, the Division met with CPAI to discuss the past due WSPA automatic contraction and the possibility of deferring the Expansion Drilling Commitments which were due on June 1, 2004. The Operator requested that the Expansion Drilling Commitments be deferred from June 1, 2004 to June 1, 2006 and the automatic contraction be deferred until September 1, 2004 when an application to revise the WSPA (this application) would be submitted.

The deferral of the Expansion Drilling Commitments was a fundamental revision to the conditions of the September 26, 2002 Decision approving the Eighth Expansion of the KRU. In exchange for the 2-year extension, the Operator offered to increase the bid-deferral payments, continue to pursue sanction of the proposed Drillsite 1J project, and segregate the 4 leases into 8 smaller leases. On May 14, 2004, the Division accepted the Operator's revised proposal and approved the deferral of the Expansion Drilling Commitments.

The latest event to occur in the history of the WSPA, occurred on August 12, 2004 when CPAI notified the Division that the 1J West Sak Development project had been sanctioned by the KRU working interest owners.

III. APPLICATION TO REVISE THE WEST SAK PARTICIPATING AREA

On October 7, 2004, CPAI filed a complete application with the Division to revise the WSPA. The application proposes to contract and expand the unit using 160 acre aliquot parts around the current West Sak wells and the areas where the working interest owners have committed to develop.

The current WSPA includes twelve leases but production is only allocated to six of the twelve leases. The application proposes to contract five leases, along the western edge, out of the WSPA and add four leases, along the southern and eastern edges, into the WSPA.

IV. CRITERIA

AS 38.05.180(p) gives DNR the authority to form an oil and gas unit. The Commissioner of the DNR (Commissioner) reviews unit and participating area applications under AS 38.05.180(p) and 11 AAC 83.301 – 11 AAC 83.395. By memorandum dated September 30, 1999, the

Commissioner approved a revision of Department Order 003, and delegated this authority to the Division Director (Director).

The Director will approve the Application upon finding that it will: 1) promote the conservation of all natural resources; 2) promote the prevention of economic and physical waste; and 3) provide for the protection of all parties of interest, including the State in accordance with 11 AAC 83.303(a). Subsection .303(b) sets out six factors that the Director will consider in evaluating the Application. A discussion of the subsection .303(b) criteria, as they apply to the Application, is set out directly below, followed by the Director's findings relevant to the subsection .303(a) finding and the Director's conditional approval of the Application.

A PA may include only land reasonably known to be underlain by hydrocarbons and known or reasonably estimated through use of geological, geophysical, or engineering data to be capable of producing or contributing to the production of hydrocarbons in paying quantities. 11 AAC 83.351(a). "Paying Quantities" means:

> Quantities sufficient to yield a return in excess of operating, costs, even if drilling and equipment costs may never be repaid and the undertaking as a whole may ultimately result in a loss; quantities are sufficient to yield a return in excess of operating costs unless those quantities, not considering the costs of transportation and marketing, will produce sufficient revenue to induce a prudent operator to produce those quantities. 11 AAC 83.395(4)

1) The Environmental Costs and Benefits

Approval of revisions to the WSPA has no direct environmental impact. This Decision is an administrative action and does not authorize any on-the-ground activity. Potential effects on the environment are analyzed when permits to conduct exploration or development in the unit area are reviewed. In fact, unitized development typically has less impact on the environment than development on a lease-by-lease basis. Approval of this Application does not convey any authority to conduct any operations on the surface within the unit area. The DNR's approval of the revision to the PA and Unit Plan of Development is only one step in the process of obtaining permission to drill a well or wells or develop the known reservoirs within the unit area. The Unit Operator must still obtain approval of a Plan of Operations from the state, and other permits from various agencies before drilling a well or wells or initiating development activities.

2) The Geological and Engineering Characteristics of the Proposed PA Area

Located in the eastern KRU, the West Sak sands that are produced within the WSPA are part of the much larger shallow Upper Cretaceous reservoirs now undergoing development for production of North Slope "heavy oil" in the KRU and the adjacent Milne Point and Prudhoe Bay units.

An informally named member of the Upper Cretaceous Colville Group, the West Sak sands are

present in the subsurface as a large structural northerly-striking monocline with gentle 1^{o} to 2^{o} easterly dip. The reservoir depth is only 2,700' true vertical depth subsea (tvdss) in the southwestern Kuparuk River field area, dipping to approximately 3,800' tvdss in the northeast. Two major intersecting fault systems, one system trending north and the other east, exert the primary structural control of the area. These faults, rapid facies changes, disconformities, a heavy oil/tar mat and permafrost all provide barriers to oil migration, resulting in a segmented reservoir with variable in-field rock and fluid properties.

The reservoir interval is part of a large deltaic complex and is time-equivalent to the Schrader Bluff sands. Deposited in a proximal delta to delta-front setting, the West Sak reservoir consists of an aerially extensive series of stacked coarsening- and cleaning-upward strata with a gross thickness of approximately 300'. Individual sand bodies, separated by interbedded non-reservoir siltstones and mudstones, range from a few feet to about 40' in thickness. The West Sak sandstones are unconsolidated fine-to-very fine grain litharenites and lithic wackes that are locally calcite cemented. Preserved primary macro-porosity within West Sak litharenites can be as high as 35 percent and, where not cemented by calcite, the sandstones typically have porosities of 25 percent or greater. Permeability is highly variable, but generally ranges between 10 – 800 millidarcies.

Faults exert the primary control on hydrocarbon distribution in the West Sak field, segmenting the reservoir into separate hydraulic units with oil/water contacts and net pay thicknesses that can vary greatly between fault blocks. Reservoir temperature, API gravity and oil viscosity vary laterally and with depth. Reservoir temperatures range from 60º F in the shallower area to the west to 80º F in the deeper eastern area. The API gravity of the oil varies in similar manner from 10º to 22º. Viscosity decreases from about 300 centipoises (cp) in the western area of the proposed WSPA to about 30 cp in the east.

The West Sak sands are divided into two distinct reservoir sequences: a lower inner-shelf sandstone sequence represented by the A units (oldest) and a younger shallow-marine delta-front zone represented by the B, C, and D (youngest) intervals. The lower West Sak sands, equivalent to the Schrader Bluff OBe through OBb sandstones, are subdivided from A1 (lowest) through A4. The upper West Sak sands consist of the B (lowest), C, and D units and are equivalent to the OBa and OA sandstones of the Schrader Bluff formation.

The varying oil/water contacts, combined with the structural dip of the reservoir and the stratigraphic pinch-out of some of the sand bodies within the West Sak interval, create variable net pay thicknesses and volumes within the proposed WSPA expansion area. The West Sak reservoir sands are more distal with siltstone and mudstone becoming the dominant lithologies south of the West Sak River State #5 well.

3) Prior Exploration Activities

Oil in the West Sak interval was first encountered in the Chevron Kavearak Point #1 well in 1969, but was first tested in the ARCO West Sak #1 in 1971. The West Sak sands type-section

is defined as the interval between 3,742' and 4,157' measured depth (md) in the ARCO West Sak River State #1. The well originally produced 17º - 22º API oil at a rate of 90 – 100 barrels of oil per day (BOPD). The West Sak reservoir, penetrated by hundreds of KRU development wells, was largely ignored for the next decade or so.

Between 1984 and 1986 ARCO Alaska, Inc. conducted a pilot production program in Tract 61 in the southeastern part of the KRU. Since that time, first-year average production rates from a typical grassroots West Sak well have climbed from a few hundred BOPD on December 26, 1997, when the field commenced commercial production' to an average as high as 10,000 BOPD today. The increase in production rates is a result of advanced drilling technologies such as multi-lateral and undulating horizontal wells that are able to tap several producing oil sands from the same main well bore and the use of enhanced oil recovery (EOR) technologies that make it possible to extract more oil from the reservoir. With horizontal multi-laterals, some of the recently drilled West Sak wells have come on at initial production rates as high as 7,000 BOPD. These wells generally taper off to sustained production rates of 1,500 or 2,000 BOPD after several months of production.

In August 2004 ConocoPhillips announced that new drilling in the West Sak reservoir will increase West Sak oil field production to approximately 45,000 BOPD by 2007. The development program will utilize two drill sites within the KRU: Drill Site1E (an existing drill site) and Drill Site 1J (a new drill pad). The operator plans to drill 13 West Sak wells at Drill Site 1E and 31 wells at Drill Site 1J. The development program also includes expansion of facilities at Drill Site 1E, and the construction of new facilities, pipelines and power lines to support Drill Site 1J. Expansion of Drill Site 1E is expected to add about 10,000 BOPD, with first production anticipated during the latter half of 2004. Development of Drill Site 1J will add about 30,000 BOPD, with first production expected in late 2005 and peak production in 2007.

ConocoPhillips provided the division with well logs, cross sections, seismic data and engineering information sufficient to for evaluation of the proposed WSPA expansion. Analyses of these data support this proposed revision of the WSPA boundary.

4) The Applicant's Plan for Development of the Participating Area

On June 30, 2004, prior to submitting this application, the KRU Operator submitted the 2004 Updates to the KRU Plan of Development (KRUPOD). The KRUPOD is updated annually and submitted for approval 30 days before the previous plan's period ends for the Division's approval. Each year the KRU Operator has submitted the KRUPOD around July 1st and they are effective for the period from August 1st of that year to June 30th of the following year. Following the written submittal, the Operator has given a presentation of the material. After review of the material submitted on July 1st and review of the additional material submitted at the presentation, the KRUPOD is typically approved.

The KRUPOD which was submitted on June 30, 2004 was approved on November 18, 2004. This application's portion of the KRUPOD, amends the KRUPOD and is approved for the

period beginning on the effective date of this decision through July 31, 2005. The details of the WSPA's portion of the KRUPOD are included as Attachment #5, but the basic plan is to drill thirteen wells in the Drill Site 1E area and thirty-one wells in the Drill Site 1J area. Wells will be drilled in a producer bounded, line drive pattern. The multilateral wells will be drilled in a relatively uniform pattern with an offset between wells of approximately 1300 feet. The lateral lengths will range between 3600 feet and 7000 feet.

5) The Economic Costs and Benefits to the State

Approval of the revision to the WSPA and associated field development will provide economic benefits to the state. The long-term goal is to maximize the physical and economic recovery of hydrocarbons from each of the productive reservoirs. Maximum hydrocarbon recovery will enhance the state's long-term royalty and tax revenue stream.

Any additional administrative burdens associated with the PAs are far outweighed by the additional royalty and tax benefits derived from production.

The Division finds CPAI's tract allocation schedule acceptable for allocating production and costs among the leases in the WSPA. CPAI shall begin reporting all West Sak Production to the WSPA and Tract Operation KU09 is terminated on the effective date of this Decision.

V. FINDINGS

1) Conservation of Natural Resources

The formation of oil and gas units, as well as the formation of PAs within units, generally conserves hydrocarbons. Coordinated development of leases held by diverse parties maximizes total hydrocarbon recovery and minimizes waste. Revision of the WSPA to reflect the current development plans provides for efficient, integrated development of the West Sak reservoir within the KRU. A comprehensive operating agreement and plan of development governing the area will help avoid duplicative development efforts on and beneath the surface.

Producing oil and gas from the area through the KRU facility reduces the incremental environmental impact of the production and helps maximize hydrocarbon recovery, while minimizing negative impacts on all other natural resources.

2) Prevention of Economic and Physical Waste

Generally, the formation of a PA facilitates the equitable division of costs and allocation of the hydrocarbon shares, and provides for a diligent development plan, which helps to maximize hydrocarbon recovery from a reservoir. Further, the formation of a PA, which enables both facility sharing opportunities and adoption of a unified reservoir management strategy, may allow economically marginal hydrocarbon accumulations to be developed. Formation of a PA promotes complete development of a reservoir with variable productivity and profitability across

adjoining leases.

3) Protection of All Parties

Because hydrocarbon recovery will more likely be maximized, the state's economic interest is promoted. Diligent exploration and development under a single approved unit plan without the complications of competing leasehold interests promotes the state's interest. The revision of the WSPA advances the efficient evaluation and development of the state's resources, while minimizing impacts to the area's cultural, biological, and environmental resources. Operating under the KRU Agreement provides for accurate reporting and record keeping, and royalty settlement. These all protect the state's interest.

The revision of the WSPA protects the economic interests of all working interest owners and the royalty owner. Combining interests and operating under the terms of a unit agreement and unit operation agreement assures each individual working interest owner an equitable allocation of costs and revenues commensurate with the resources on and value of its lease(s).

VI. DECISION

Based on the facts discussed in this document and the administrative record, I make the following findings and decision:

1) The acreage proposed for inclusion is underlain by hydrocarbons and reasonably estimated to be capable of production or contributing to production in sufficient quantities to justify the revision of the WSPA.

2) The geological and engineering data justify the inclusion of the proposed acreage within the PA under the terms of the applicable regulations governing formation and operation 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.

3) The production of hydrocarbons through the existing production and processing facilities reduces the environmental impact of the additional production. Using existing facilities will avoid unnecessary duplication of development efforts on and beneath the surface.

4) The WSPA is stratigraphically limited to the West Sak Formation Sands defined as being from 3,742' MD to 4,156' MD in the West Sak No. 1 Well (API #500292009000).

5) The Accounting Unit Code KU09 is closed, effective November 1, 2004. WSPA production will continue to be reported to the WSPA production Accounting Unit code.

6) This revision to the WSPA provides for the equitable division of costs and an equitable

allocation of produced hydrocarbons under a development plan designed to maximize physical and economic recovery from the reservoirs within the approved participating area.

7) The allocations of production and costs for the tracts within the WSPA as submitted in the application are approved.

8) The acreage proposed to be deleted from the WSPA is appropriate to be deleted.

For these reasons I hereby approve the revision of the West Sak Participating Area effective November 1, 2004.

A person adversely affected by this decision may appeal this decision, in accordance with 11 AAC 02, to Tom Irwin, Commissioner, Department of Natural Resources, 550 W. 7th Avenue, Suite 1400, Anchorage, Alaska 99501-3561. Any appeal must be received at the above address, or by fax to 1-907-269-8918, within 30 calendar days after the date of "delivery" of this decision, as defined in 11 AAC 02.040. A copy of 11 AAC 02 may be obtained from any regional information office of the Department of Natural Resources.

Signed on 12/17/2004 _____
Mark D Myers Date
Division of Oil and Gas

Attachments:
1. WSPA Exhibit C to the KRU Agreement (Map)
2. WSPA Exhibit D to the KRU Agreement (Tract Participation Schedule)
3. Plan of Development for 11/01/2004 to 12/31/2005

Exhibit C - West Sak Participating Area Tract Allocations

Effective October 1, 2004

Tract No.	ADL No.	Legal Description	Lease Acres	Lease Royalty	Acres Included In PA	Tract Participation
34	25639	T12N, R10E UM: Sec 34: SE 1/4.	2560	0.125	160	1.0116%
35	25638	T12N, R10E UM: Sec 35: SW 1/4 and W 1/2 of SE 1/4.	2560	0.125	240	1.5174%
38	25649	T11N, R10E UM: Sec 2: W 1/2 and SE 1/4 and W 1/2 of NE 1/4; Sec 11: All; Sec 12: W 1/2 and SE 1/4 and S 1/2 of NE 1/4.	2560	0.125	1760	11.1273%
39	25648	T11N, R10E UM: Sec 3: NE 1/4 and S 1/2; Sec 10: All.	2560	0.125	1120	7.0810%
55	25651	T11N, R10E UM: Sec 15: All; Sec 21: E 1/2 of E 1/2; Sec 22: All.	2560	0.125	1440	9.1041%
56	25650	T11N, R10E UM: Sec 13: All; Sec 14: All; Sec 23: All; Sec 24: All.	2560	0.125	2560	16.1851%
60	28248	T11N, R11E UM: Sec 30: W 1/2; Sec 31: W 1/2.	1851	0.125	617	3.9009%
61	25661	T11N, R10E UM: Sec 25: All; Sec 26: All; Sec 35: All; Sec 36: All.	2560	0.125	2560	16.1851%
62	25660	T11N, R10E UM: Sec 27: All; Sec 28: E 1/2 of E 1/2; Sec 33: E 1/2 of E 1/2; Sec 34: All.	2560	0.125	1600	10.1157%
81	25663	T10N, R10E UM: Sec 3: All; Sec 4: E 1/2 of E 1/2; Sec 9: E 1/2 of NE 1/4; Sec 10: N 1/2.	2560	0.125	1200	7.5868%
82	25662	T10N, R10E UM: Sec 1: All; Sec 2: All; Sec 11: All; Sec 12: All.	2560	0.125	2560	16.1851%
				Subtotals:	15817	100.0000%

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Attachment 1 – Map of Proposed Participating Area