

FINDINGS AND DECISION

of the Director, Division of Oil and Gas

APPROVING THE
NIKAITCHUQ UNIT APPLICATION

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

April 29, 2004

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I. INTRODUCTION AND BACKGROUND

The proposed Nikaitchuq Unit (NU) is located in near shore waters of the Beaufort Sea, north of Oliktok Point at Spy Island, and north of the Kuparuk and Milne Point Units. Armstrong Alaska, Inc. (Armstrong) filed the application with the Division of Oil and Gas (Division) on January 29, 2004, on behalf of itself and the proposed NU Operator, Kerr McGee Oil & Gas Corporation (KMG or Operator).

The proposed unit area encompasses approximately 12,968 acres within eight State of Alaska (State) oil and gas leases. The NU will be administered by the State under the terms of the Nikaitchuq Unit Agreement (Agreement). The Agreement conforms and modifies all State oil and gas leases within the unit area so that the unit operator can explore and develop on a unit-wide basis instead of on a lease-by-lease basis.

The Department of Natural Resources (DNR) issued five of the eight State oil and gas leases following Beaufort Sea Sale 86, which was held on November 18, 1997. The five leases, ADL 388579, ADL 388580, ADL 388581, ADL 388582 and ADL 388583, were issued on State lease form DOG 9609(REV 6/97). With an effective date of January 1, 1998, the seven-year primary term of these leases expires on December 31, 2004.

DNR issued two of the leases, ADL 389719 and ADL 389720, following Beaufort Sea Areawide 2000 Oil and Gas Lease Sale, which was held on November 15, 2000. The leases were issued on State lease form DOG 200004. With an effective date of June 1, 2001, the seven-year primary term of these leases expires on May 31, 2008.

The final State lease in the proposed unit area, ADL 390433, was offered in the Beaufort Sea Areawide 2003 Oil and Gas Lease Sale, which was held on October 29, 2003. The lease was issued on State lease form DOG 200204 (Revised 10/2003). With an effective date of May 1, 2004, the seven-year primary term of ADL 390433 expires on April 30, 2011.

All eight of the leases in the proposed unit area retain a 16.66667% royalty to the State. KMG and Armstrong hold working interests of 70 percent and 30 percent respectively in seven of the eight leases. Armstrong holds 100% working interest in the eighth lease, but Armstrong has informed the Division that they will be assigning a 70 percent working interest to KMG.

II. APPLICATION FOR THE FORMATION OF THE NIKAITCHUQ UNIT

Armstrong submitted a complete application to form the NU and paid the \$5,000.00 unit application filing fee. Armstrong's application included: a proposed NU Agreement; Exhibit A to the agreement, legally describing the proposed unit area, its leases, and ownership interests; Exhibit B to the agreement, a map of the proposed unit; and Exhibit G to the agreement, the proposed Initial Plan of Exploration. In addition, Armstrong submitted a NU Operating Agreement; technical data supporting the application; and evidence that they had invited all proper parties to join the application.

The Division determined that Armstrong's application was complete and published a unit notice in the "Anchorage Daily News" and in the "Arctic Sounder" on Thursday, February 19, 2004. DNR also posted notices on the State's online public notice web page. The Division provided copies of the public notices to the North Slope (NS) Borough Assembly, the NS Mayor, the Arctic Slope Regional Corporation (ASRC), the cities of Barrow and Nuiqsut, the Kuukpik Corp., and other interested parties in compliance with 11 AAC 83.311. The Division also provided public notices to the Alaska Department of Environmental Conservation (DEC), the Alaska Department of Fish and Game (ADF&G), and to post offices, libraries, and radio stations in the area. The notice invited interested parties and members of the public to submit comments by March 22, 2004. The Division did not receive any comments.

The NU Agreement requires that the unit operator, KMG, file unit plans describing the activities planned for the proposed unit area. KMG must consider how it can best explore and develop the resources underlying the entire unit area, without regard to internal lease boundaries. Armstrong proposed a five-year Unit Plan of Exploration (Initial POE) as a required under 11 AAC 83.341. KMG plans to drill three wells during the Initial POE. KMG recently drilled and tested the first Unit Exploratory well and plans to complete geologic studies and seismic reprocessing in 2005. The second and third wells are planned in 2006 and 2008, but may be drilled earlier (Attachment 4).

III. DISCUSSION OF DECISION CRITERIA

AS 38.05.180(p) gives DNR the authority to form an oil and gas unit. The Commissioner of DNR (Commissioner) reviews unit 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.

1. The Environmental Costs and Benefits of Unitized Exploration or Development

Alaska statutes require the DNR to give public notice and issue a written finding before disposal of the state's oil and gas resources AS 38.05.035(e); AS 38.05.945; 11 AAC 82.415. In preparing a written decision before an oil and gas lease sale, the commissioner may impose additional conditions or limitations beyond those imposed by law. AS 38.05.035(e). The DNR develops lease stipulations through the lease sale process to mitigate the potential environmental, social and cultural impacts from oil and gas activity.

The leases that are proposed to be included in the NU contain many stipulations designed to protect the environment and address any outstanding concerns regarding impacts to the area's fish and wildlife species and to habitat and subsistence activities. They address the protection of primary waterfowl areas, site restoration, construction of pipelines, seasonal restrictions on operations, public access to, or use of the leased lands, and avoidance of seismic hazards. Including these leases in the NU will not result in additional restrictions or limitations on access to surface lands or to public and navigable waters. All lease operations are subject to a coastal zone consistency determination, and must comply with the terms of both the State and North Slope Borough coastal zone management plans.

Ongoing mitigation measures such as seasonal restrictions on specific activities in certain areas can reduce the impact on bird, fish, and mammal populations. With these mitigation measures, the anticipated exploration and development related activity is not likely to significantly impact bird, fish, and mammal populations. Area residents use the unit area for subsistence hunting and fishing. Oil and gas activity may impact some wildlife habitat, and some subsistence activity. The environmental impact will depend on the level of development activity, the effectiveness of mitigation measures and the availability of alternative habitat and subsistence resources. In any case, the anticipated activity under the new NU will impact habitat and subsistence activity less than if the lessees developed the resources on an individual lease basis. Unitized exploration, development and production will minimize surface impact.

Furthermore, state unitization regulations require the commissioner to approve a Plan of Operations before the unit operator performs any field operations. 11 AAC 83.346 Before KMG began operations on the leases, Armstrong filed a lease Plan of Operations, which the Division approved on October 21, 2003, and was subsequently transferred to KMG. Any additional Plan of Operations must describe the operating procedures designed to prevent or minimize adverse effects on natural resources. The unit operator must guarantee full payment for all damage sustained to the surface estate before beginning operations. The Plan of Operations must include plans for rehabilitation of the unit area. When the operator proposes to further explore and develop the unit area and submits a Unit Plan of Operations, the Division will ensure that it complies with the lease stipulations and lessee advisories developed for the most recent North Slope areawide lease sale.

The approval of the NU has no environmental impact itself. The commissioner's approval of the unit is an administrative action, which by itself does not convey any authority to conduct operations within the unit. Unitization does not waive or reduce the effectiveness of the mitigating measures that condition the lessee's right to conduct operations on these leases. The Division's approval of the POE is only one step in the process of obtaining permission to drill wells and develop the known reservoirs within the unit area.

The Unit Operator must still obtain approval of a Unit Plan of Operations and obtain various permits from state agencies before initiating activities. KMG plans to explore the area through ice roads and pads, which will leave no trace after they melt. All planned exploration wells will be plugged and abandoned before the ice breaks up.

2. The Geological and Engineering Characteristics of the Reservoir

The proposed NU contains three distinct prospects: 1) the Cretaceous Brookian sandstone; 2) the Jurassic Nuiqsut sandstone; and 3) the Triassic Sag River Sandstone. Armstrong tied in 3-D seismic over the proposed unit area with surrounding well control to map out the three sand prospect trends in the area.

The companies believe that the overall trend in quality and thickness of the Sag River sandstone should increase to the north/northwest from the Milne Point area to the NU. Armstrong and KMG have identified potential Jurassic reserves by tying the 3-D seismic coverage over the proposed NU with the Thetis Island No. 1, Kalubik No. 1, and recently drilled Ivik No. 1 and Ooguruk No. 1 wells. Wells drilled directly southwest of the NU have identified Brookian intervals “with good reservoir quality and hydrocarbon shows”.

There is a significant amount of well data south of the proposed NU that provides data to justify the three prospects. The Milne Point Unit field lies to the south-southeast of the proposed unit and produces oil out of the Schrader Bluff, Kuparuk, and Sag River Formations. The Kuparuk River Unit produces out of the Kuparuk River Formation and lies south of the proposed unit. A dozen or so exploration wells that lie to the west-southwest of the proposed Nikaitchuq area have tested hydrocarbons in both the Kuparuk formation and Jurassic sands.

3. Prior Exploration Activities in the Unit Area

The first major exploration activity in the area in the early 1970's targeted the Ivishak sandstone following the discovery of the prolific Ivishak sandstone in Prudhoe Bay State No. 1 in 1967. The Hamilton Brothers Milne Pt. No. 18-1 was one of the wells drilled on the Milne Point Structure in search of Ivishak and Lisburne objectives. This well encountered about 50 feet of tight oil-saturated sandstone that was not tested and a section of Kuparuk Sandstone that tested at a rate of 875 BOPD. This discovery led to more concentrated drilling in the Milne Point area for Kuparuk reserves. In the early 1980's the Sag River was cored in the Conoco Milne Pt. Unit No. C-1 well and contained bleeding oil and gas. The Sag River Formation was also cored in the Milne Point Unit L-1 well and contained no visible porosity or staining and the Sag River appeared tight on wireline logs.

BP's Mukluk well, drilled to the northeast of the proposed unit in 1984, contained about 50 feet of good quality Kuparuk Sandstone. The Sag River Sandstone was absent due to erosion by LCU (Lower Cretaceous Unconformity). The Tenneco Phoenix well, drilled in 1986 encountered around 90 feet of good reservoir quality Sag River sandstone immediately below the LCU. The porous and permeable Sag River sand quality demonstrates that good quality reservoir potential exists to the northwest of the proposed NU.

In the early 1990's about a dozen wells were drilled to the west-southwest of the proposed NU with Jurassic sandstones and Kuparuk C sandstone targets. The ARCO Kalubik No. 1 well encountered approximately 160 feet of productive Nuiqsut and Nechelik sandstone that tested at an unstimulated rate of 336 BOPD. In addition, the well penetrated an 85 foot section of Sag River Sandstone with calculated log porosities in the range of 15 to 22%. The Thetis Island No.

1 well also encountered an 80 foot section of porous Sag River Sandstone with log calculated porosities in the range of 16-24%. A pay section of Nuiqsut sandstone was also encountered in this well that tested at an average rate of 120 BOPD with a high rate of 650 BOPD. Both the Kalubik No. 1 well and Thetis Island No. 1 well drilled through Brookian sandstones with mudlog hydrocarbon shows.

In the late 1990's BP drilled several dedicated Sag River wells, including MPU C-23, K-33, E-13, E-13A, A-1, F-33, F-33A, and F-73A. As of December 2002, the MPU F-73 has produced 13,430 MBO. As of April 2004, the MPU F-33A well has produced 384,444 MBO.

Pioneer and Armstrong drilled three exploration wells in 2003 in the Ooguruk Unit to the southwest of the proposed NU. The Ivik No. 1 well encountered reservoir quality oil-stained sands with mudlog shows within the Brookian and Jurassic intervals. The Brookian sands tested wet in a formation test; the Nuiqsut sands were approximately 60 foot thick and tested at a rate of 1300 BOPD after fracture stimulation. The Ooguruk well, drilled approximately one and one-half miles to the north of the Ivik well contained 45 feet of Nuiqsut sandstone pay that was not production tested, but did produce hydrocarbons in a formation test.

KMG and Armstrong provided strong geological, geophysical, and engineering data to support their application for the formation of the NU. They utilized the surrounding well control and tied it into the 3-D seismic coverage to map out three viable exploration targets: the Brookian, Jurassic, and Sag River Sandstones. KMG and Armstrong also provided pressure data and calculated oil gradients in the area that indicate the likelihood that all three targets may be present in the NU, which justifies the formation of the NU.

4. Plans for Exploration and Development of the Proposed Unit Area

The unit operator must provide plans for exploration or development that justify including the proposed acreage in the unit area. 11 AAC 83.306(1). A Unit Plan of Exploration must include a description of proposed exploration activities, including the bottom-hole locations and depths of proposed wells, and the estimated date drilling will commence. 11 AAC 83.341(a).

The Initial POE, attached to this Decision as Attachment 4, sets out a timely sequence of exploration activities that will facilitate the ultimate development and production of the reservoir, if oil and gas are discovered in commercial quantities. Furthermore, completion of the proposed exploration activities as scheduled during the five-year initial term will satisfy the performance standards and diligence requirements that the State and the WIOs agreed to as a condition for approval of the Agreement. The Division and the WIOs have agreed that a failure to timely perform the various components set out in the Initial POE would constitute a default under the Agreement.

The Initial POE protects the interests of the public and the State by committing the Operator to drill wells and reprocess seismic data within the unit area. The Initial POE, with the agreed-to terms and conditions, ensures that the lease extensions resulting from unitization under 11 AAC 83.336 continue only so long as the applicants proceed diligently with exploration and development

of the unit area. Therefore, the plans for exploration of the proposed unit area justify approval of the Application under the section .303(b)(4) criteria.

5. The Economic Costs and Benefits to the State

Approval of the NU could result in both short-term and long-term economic benefits to the State. The additional assessment of the hydrocarbon potential of the leases will create jobs and in-state economic activity in the short-term and if the exploration activity is successful, the State will enjoy royalty and tax revenues as well as employment opportunities over the long-term.

The primary term of the majority of the leases is due to expire on December 31, 2004, but it is in the best interest of the State to form the unit to facilitate the exploration efforts.

The five Sale 86 and two Beaufort Sea Areawide 2000 leases (Old Leases) in the proposed NU are not written on the State's current lease form (DOG 200204). Effective the date of this decision, the WIOs agreed to permanently amend the terms of the Old Leases to conform with the provisions in DOG 200204 and to delete the last sentence in paragraph 15(d) of all the lease forms. Specifically:

- Delete the last sentence of paragraph 36(b) of the Old Leases and insert "The 'actual and reasonable costs of transportation' for marine transportation are as defined in 11 AAC 83.229(a), (b)(2), and (c) – (l)."
- Delete the last sentence of paragraph 15(d) of all eight leases. That sentence reads "If any portion of this lease is included in a participating area formed under a unit agreement, the entire leased area will remain committed to the unit and this lease will not be severed."

Any additional administrative burdens associated with the formation of the new unit are far outweighed by the additional royalty and tax benefits derived from any production that may occur if the exploration and development activity is successful.

6. Amendments to the Standard Unit Agreement

Armstrong initially submitted a unit agreement based on the State Only Model Form, dated June 2002 (Model Form) and proposed no modifications. The Royalty Accounting Section of the Division proposed ten modifications to the Model Form for clarity reasons and the Units Section of the Division proposed two changes to allow severing of leases upon unit contraction. Armstrong and KMG verbally agreed to the all the modifications listed in Attachment 5 to this decision and have agreed to submit an executed Unit Agreement with all the proposed changes by May 7, 2004.

The Agreement defines the relationship between the unit operator, the working interest owners (WIOs), and the royalty owners. It describes the rights and responsibilities, in addition to those imposed by state law and the leases, of the unit operator, working interest owners, and royalty owners for exploration and development of the unit area. DNR may approve the Agreement if the available data suggest that the unit area covers all or part of one or more oil or gas reservoirs,

or all or part of one or more potential hydrocarbon accumulations that should be developed under an approved unit plan, and the Application meets the other statutory and regulatory criteria.

These modifications to the Standard Unit Agreement are in the best interest of the State and under the .303.(b)(6) criteria, support approval of the Application.

IV. FINDINGS

The Application meets the criteria in 11 AAC 83.303(a) as discussed below.

1. Promote the Conservation of All Natural Resources

The unitization of oil and gas reservoirs is a well-accepted means of hydrocarbon conservation. Without unitization, the unregulated development of reservoirs tends to be a race for possession by competitive operators. The results can be: (1) overly dense drilling, especially along property lines; (2) rapid dissipation of reservoir pressure; and (3) irregular advance of displacing fluids. These all contribute to the loss of ultimate recovery or economic waste. The proliferation of surface activity, duplication of production, gathering, and processing facilities, and haste to get oil to the surface also increases the likelihood of environmental damage (such as spills and other surface impacts). Requiring lessees to comply with conservation orders and field rules issued by the AOGCC would mitigate some of these impacts without an agreement to unitize operations. Unitization, however, provides a practical and efficient method for maximizing oil and gas recovery, and minimizes negative impacts on other resources.

The formation of the NU will promote the conservation of both surface and subsurface resources through the unitized (rather than lease-by-lease) development. Unitization allows the unit operator to explore the area as if it were one lease. The formation of the unit will allow this area to be comprehensively and efficiently explored and developed. Adoption of an Operating Agreement and Plan of Development governing that production will help avoid unnecessary duplication of development efforts on and beneath the surface.

Exploring and developing the leases under a unified Plan of Exploration and Plan of Development will reduce the incremental environmental impact of the additional production.

2. Promote the Prevention of Economic and Physical Waste

Traditionally, under unitized operations, the assignment of undivided equity interests in the oil and gas reservoirs to each lease largely has resolved the tension between lessees to compete for their share of production. Economic and physical waste, however, could still occur without a well-designed and coordinated development plan and an equitable cost sharing formula. Consequently, unitization must equitably divide costs and production, and plan to maximize physical and economic recovery from any reservoir.

An equitable allocation of hydrocarbon shares among the WIOs discourages hasty or unnecessary surface development. Similarly, an equitable cost sharing agreement promotes efficient development of reservoirs and common surface facilities and encompasses rational operating

strategies. Such an agreement further allows the WIOs to decide well spacing requirements, scheduling, reinjection and reservoir management strategies, and the proper 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 by adopting a unified reservoir management plan.

Unitized operations greatly improve development of reservoirs beneath leases that may have variable productivity. Marginally economic reserves, which otherwise would not be produced on a lease-by-lease basis, often can be produced through unitized operations as a stand-alone project or in combination with more productive leases. Facility consolidation saves capital and promotes better reservoir management by all WIOs. Pressure maintenance and secondary recovery procedures are much more predictable and attainable through joint, unitized efforts than would otherwise be possible. In combination, these factors allow less profitable areas of a reservoir to be developed and produced in the interest of all parties, including the state.

The lessees in the proposed unit leases have signed the Unit Agreement and the Unit Operating Agreement. By combining the efforts of multiple leases into a single effort, infrastructure can be shared, which eliminates the need to construct stand-alone facilities to process the volume of recoverable hydrocarbons that may be discovered on each individual lease, thus preventing economic and physical waste. Given the overall North Slope economics, stand-alone facilities on each individual lease would most likely be uneconomic.

3. Provide for the Protection of All Parties in Interest, Including the State

The proposed unit seeks to protect the economic interests of all WIOs of the reservoirs in the unit, as well as the royalty owner. Combining interests and operating under the terms of the Unit Agreement and the Unit Operating Agreement assures each individual working interest owner an equitable allocation of costs and revenues commensurate with the value of their leases.

Because hydrocarbon recovery will more likely be maximized, the state's economic interest is promoted. Diligent development and exploration under a single approved unit plan without the complications of competing leasehold interests is certainly in the state's interest. It promotes efficient evaluation and development of the state's resources, yet minimizes impacts to the area's cultural, biological, and environmental resources.

The lease form and the conditions of this decision provide, in part, that the state's royalty share will be free and clear of all lease expenses. Operating under the terms and conditions of the lease and Unit Agreement also provides for accurate reporting and record keeping, royalty settlement, in kind taking, and emergency storage of oil, all of which will further the state's interest. Finally, the inclusion of the lands in the unit promotes the state's interest in the evaluation and development of those lands sooner rather than later.

V. DECISION

- 1) For the reasons discussed above, I hereby approve the NU Application subject to the conditions specified herein. Armstrong submitted a final version of the Agreement on April 30, 2004. The five-year term of the Agreement and the Initial POE become effective as of 12:01 a.m. on the day following approval by the Director.
- 2) The unitized development and operation of the leases will reduce the amount of land and fish and wildlife habitat that would otherwise be disrupted by individual lease development. Reducing environmental impacts and minimizing interference with subsistence activity is in the public interest. The formation of the new unit will not diminish access to public and navigable waters beyond those limitations imposed by law or already contained in the oil and gas leases.
- 3) The available well data and Initial POE justify formation of the new unit. Under 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 of Alaska, the leases listed in Attachment 1, and shown on Attachment 2 are included in the NU.
- 4) The WIOs waive the extension provisions of 11 AAC 83.140 and Article 15.2 of the Agreement and the notice and hearing provisions of 11 AAC 83.374 applicable to default and termination of the NU.
- 5) In accordance with Article 8.1.1 of the Agreement and 11 AAC 83.341, an annual status report is due on each anniversary of the effective date of the NU. The annual status report must describe the status of projects undertaken and the work completed during that year of the Initial POE, as well as any proposed changes to the plan.
- 6) The unit operator must submit a Second Plan of Exploration to the Commissioner at least 60 days before the Initial POE expires. Alternatively, the unit operator shall request approval of the first Plan of Development, if appropriate, at least 90 days before the Initial POE expires. 11 AAC 83.341(b) and .343(c).
- 7) The Nikaitchuq No. 1 well, drilled during the 2003/2004 winter drilling season, satisfies the first well required under the Initial POE.
- 8) Failure to drill a second well or obtain approval of a revised POE by June 1, 2006, will result in the automatic termination of the NU effective June 1, 2006.
- 9) Failure to drill a third well or obtain approval of a revised POE by June 1, 2008 will result in the automatic termination of the NU effective June 1, 2008.
- 10) If the NU terminates for failure to fulfill any of the commitments in the Initial POE, the WIOs shall automatically surrender all leases within the Unit whose primary terms have expired, effective the day the unit terminates.

A person affected by this decision may appeal it, in accordance with 11 AAC 02. Any appeal must be received within 20 calendar days after the date of "issuance" of this decision, as defined in 11 AAC 02.040(c) and (d) and may be mailed or delivered to Thomas E. Irwin, Commissioner, Department of Natural Resources, 550 W. 7th Avenue, Suite 1400, Anchorage,

Alaska 99501; faxed to 1-907-269-8918, or sent by electronic mail to dnr_appeals@dnr.state.ak.us. This decision takes effect immediately. An eligible person must first appeal this decision in accordance with 11 AAC 02 before appealing this decision to Superior Court. A copy of 11 AAC 02 may be obtained from any regional information office of the Department of Natural Resources.

Original signed by Mark D. Myers

April 29, 2004

Mark D. Myers, Director
Division of Oil and Gas

Date

- Attachments:
1. The Nikaitchuq Unit Agreement
 2. Exhibit A, Tract Description and Ownership Schedule
 3. Exhibit B, Map of the Nikaitchuq Unit Boundary and Exploration Blocks
 4. Exhibit E, Plan of Exploration
 5. Amendments to the State Only Model Form, dated June 2002

4. Attachment 5: Amendments to the State Only Model Form, dated June 2002

NOTE: Text that is underlined indicates where text has been added and text that has the strikethrough font indicates where text has been deleted.

ARTICLE 9: PARTICIPATING AREAS

9.1 *Amend the last sentence to read:*

The Unit Operator shall notify the Commissioner before the ~~of~~ commencement of Sustained Unit Production ~~within 10 days after commencement~~ from each Participating Area.

9.8.1 *Amend the first sentence to read:*

If the Commissioner consents to the transfer of Unitized Substances between Participating Areas without immediate payment of royalties, the Unit Operator shall provide monthly reports to the State of the transferred Unitized Substance volumes in both the originating and receiving Participating Areas as specified in 11 AAC 04.

ARTICLE 11: ALLOCATION OF PRODUCTION

11.1 *Amend the fourth sentence to read:*

The Commissioner will give the Unit Operator and Working Interest Owners reasonable notice and an opportunity to be heard before revising the Unit Operator's proposal.

ARTICLE 12: LEASES, RENTALS AND ROYALTY PAYMENTS

12.1 *Amend article to read:*

The Working Interest Owners shall pay rentals and royalty payments due under the Leases. Payments to the State must be made in accordance with the applicable State regulations, 11 AAC 04 and 11 AAC 83.110. ~~Those payments must be made to any depository designated by the State with at least sixty days notice to the Unit Operator and the Working Interest Owners.~~

12.4 *Amend third sentence to read:*

These excluded expenses also include the costs of gathering and preparing the Unitized Substances for transportation off the Unit Area and ~~gathering and~~ transportation costs incurred within the Unit Area. ~~incurred before the Unitized Substances are delivered to a common carrier pipeline.~~

12.5 *Amend article to read:*

Notwithstanding any contrary Lease term or provision in 11 AAC 83.228—11 AAC 83.229, all royalty deductions for transportation, including marine, truck, and pipeline transportation, from the Unit Area to the point of sale are limited to the actual and reasonable costs incurred by the Working Interest Owners. These transportation costs must be determined by taking into account all tax benefits applicable to the transportation.

12.6 Amend article to read:

The Unit Operator shall give the Commissioner notice of the anticipated date for commencement of production at least six months before the commencement of Sustained Unit Production from a Participating Area. The Commissioner may take Unitized Substances in-kind in accordance with the following: ~~Within ninety days of receipt of that notice, T~~he Commissioner will give the ~~Working Interest Owners~~ Unit Operator 90 days written notice of ~~its~~ the State's initial elections to take ~~Unitized Substances in-kind all, none, a specified percentage, or a specified quantity of its royalties in any Unitized Substances produced from the Participating Area.~~ After taking has actually commenced, the Commissioner will, ~~in his or her discretion,~~ may increase or decrease ~~(including ceasing to take royalty Unitized Substances in kind)~~ the amount of ~~royalty~~ Unitized Substances the State takes taken in-kind by not more than 10 percent, upon 30 days written notice to the Unit Operator; and greater than 10 percent, upon 90 days written notice to the Unit Operator. ~~The Commissioner shall give written notice to the Working Interest Owners ninety days before the first day of the month in which an increase or decrease is to be effective.~~

12.6.3 Amend article to read:

Royalty Interest Unitized Substances delivered in kind shall be delivered in good and merchantable condition and be of pipeline quality. Those substances shall be free and clear of all lease expenses, Unit Expenses, and Participating Area Expenses, and free of any lien for these excluded Expenses. These excluded expenses include, but are not limited to, expenses for separating, cleaning, dehydration, saltwater removal, processing, compression, pumping, manufacturing, and the costs of gathering and preparing the Unitized Substances for transportation off the Unit Area and transportation costs within the Unit Area. If a Working Interest Owner processes the Unitized Substances to separate, extract or remove liquids from a Working Interest Owner's share of natural gas Unitized Substances, the State ~~will, in its discretion,~~ may require that a Working Interest Owner also process the State's share of natural gas Unitized Substances being taken in kind in the same manner without cost to the State. Under these circumstances, the State, or its buyer, shall only pay any tariffed transportation costs and shrinkage of the volume of gas resulting from processing.

12.8 Replace article to read:

The Unit Operator shall maintain records, and shall keep and have in its possession books and records including expense records, of all exploration, development, production, and disposition of all Unitized Substances and Outside Substances. Each Working Interest Owner shall maintain records of the disposition of its portion of the Unitized Substances and Outside Substances including sales prices, volumes, and purchasers. The Unit Operator and the Working Interest Owners shall permit the Commissioner ~~or its agents~~ to examine those books and records at all reasonable times. Upon request by the Commissioner, the Unit Operator and the Working Interest Owners shall make the books and records available to the Commissioner at the Commissioner's office designated by the Commissioner. They may provide these books and records in a mutually agreeable electronic format. These books and records of exploration, development, production, and disposition must employ methods and techniques that will ensure

the most accurate figures reasonably available. The Unit Operator and the Working Interest Owners shall use and consistently apply generally accepted accounting procedures.

12.10 *Amend second sentence to read:*

The State ~~will, in its discretion,~~ may audit the net profit share reports or payments due for any Lease within ten years of the ~~date~~ year of production of Unitized Substances in Paying Quantities.

13.2 *Amend Article to read:*

Ten years after Sustained Unit Production begins, the Unit Area must be contracted to include only those lands then included in an approved Participating Area, lands included in an Approved Unit Plan of Exploration or Development, and lands that facilitate production including the immediately adjacent lands necessary for secondary or tertiary recovery, pressure maintenance, reinjection, or cycling operations. The Commissioner ~~will, in the Commissioner's discretion~~may, after considering the provisions of 11 AAC 83.303, delay contraction of the Unit Area if the circumstances of a particular unit warrant. If a portion of a Lease contracts out of the unit, that portion will be severed and treated as a separate and distinct lease, which may be maintained thereafter only in accordance with the terms and conditions of the original lease. The Working Interest Owners waive the provisions of 11 AAC 83.356(b), which protect the Lease from severance when a portion of a lease is contracted out of the Unit Area. If any portion of a Lease is included in the Participating Area, the portion of the Lease outside the Participating Area will neither be severed nor will it continue to be subject to the terms and conditions of the unit. The portion of the Lease outside the Participating Area will continue in full force and effect so long as production is allocated to the unitized portion of the Lease and the lessee satisfies the remaining terms and conditions of the Lease.

13.3 *Amend Article to read:*

Not sooner than 10 years after the effective date of this Agreement, the Commissioner ~~will, in the Commissioner's discretion,~~ may contract the Unit Area to include only that land covered by an Approved Unit Plan, or that area underlain by one or more oil or gas reservoirs or one or more potential hydrocarbon accumulations and lands that facilitate production. If a portion of a Lease contracts out of the Unit Area, that portion will be severed and treated as a separate and distinct lease, which may be maintained thereafter only in accordance with the terms and conditions of the original lease. The Working Interest Owners waive the provisions of 11 AAC 83.356(e), which protect the Lease from severance when a portion of a Lease is contracted out of the Unit Area. Before any contraction of the Unit Area under this Article 13.3, the Commissioner will give the Unit Operator, the Working Interest Owners, and the ~~royalty~~ Royalty Interest owners Owners of the Leases or portions of Leases being excluded reasonable notice and an opportunity to be heard.

EXHIBIT "A"

Attached to and made a part of

UNIT AGREEMENT

NIKAITCHUQ UNIT AREA

STATE OF ALASKA

UNIT TRACT #	LESSOR LEASE #	WORKING INTEREST OWNERS	WORKING INTEREST	LEASE EFFECTIVE DATE	DESCRIPTION	ACREAGE	ROYALTY BURDEN	ORRI BURDEN
1	State of Alaska ADL 390433	Kerr-McGee Armstrong Alaska	70.00% 30.00%	WAITING ON STATE TO ISSUE LEASE	T15N-R9E, UMIAT MERIDIAN Sec 31: Protracted, All Tide & Submerged lands within the computed Territorial Sea, listed as "State Acreage" on Alaska's Seaward Boundary diagram approved by the State on 4-15-96, 431.61 acres Sec 32: Protracted, All Tide & Submerged lands within the computed Territorial Sea, listed as "State Acreage" on Alaska's Seaward Boundary diagram approved by the State on 4-15-96, 489.36 acres	920.97 acres	16.667%	William D. Armstrong - 3.33333%
2	State of Alaska ADL 389720	Kerr-McGee Armstrong Alaska	70.00% 30.00%	6/1/2001	T15N-R9E, UMIAT MERIDIAN Sec 33: Protracted, All Tide & Submerged lands Sec 34: Protracted, All Tide & Submerged lands	994.02 acres	16.667%	J. Andrew Bachner - 1.80%; Keith C. Forsgren - .20%; William D. Armstrong - 1.33333%
3	State of Alaska ADL 389719	Kerr-McGee Armstrong Alaska	70.00% 30.00%	6/1/2001	T15N-R9E, UMIAT MERIDIAN Sec 25: Protracted, All Tide & Submerged lands Sec 26: Protracted, All Tide & Submerged lands Sec 35: Protracted, All Tide & Submerged lands Sec 36: Protracted, All Tide & Submerged lands	1,539.00 acres	16.667%	J. Andrew Bachner - 1.80%; Keith C. Forsgren - .20%; William D. Armstrong - 1.33333%

UNIT TRACT #	LESSOR LEASE #	WORKING INTEREST OWNERS	WORKING INTEREST	LEASE EFFECTIVE DATE	DESCRIPTION	ACREAGE	ROYALTY BURDEN	ORRI BURDEN
4	State of Alaska ADL 388581	Kerr-McGee Armstrong Alaska	70.00% 30.00%	1/1/1998	T14N-R9E, UMIAT MERIDIAN Sec 5: Protracted, All Tide & Submerged lands Sec 6: Protracted, All Tide & Submerged lands Sec 7: Protracted, All Tide & Submerged lands Sec 8: Protracted, All Tide & Submerged lands	2,500.00 acres	16.667%	William D. Armstrong - 3.33333%
5	State of Alaska ADL 388580	Kerr-McGee Armstrong Alaska	70.00% 30.00%	1/1/1998	T14N-R9E, UMIAT MERIDIAN Sec 3: Protracted, All Tide & Submerged lands Sec 4: Protracted, All Tide & Submerged lands Sec 9: Protracted, All Tide & Submerged lands Sec 10: Protracted, All Tide & Submerged lands	2,560.00 acres	16.667%	William D. Armstrong - 3.33333%
6	State of Alaska ADL 388579	Kerr-McGee Armstrong Alaska	70.00% 30.00%	1/1/1998	T14N-R9E, UMIAT MERIDIAN Sec 1: Protracted, All Tide & Submerged lands Sec 2: Protracted, All Tide & Submerged lands	1,280.00 acres	16.667%	William D. Armstrong - 3.33333%
7	State of Alaska ADL 388583	Kerr-McGee Armstrong Alaska	70.00% 30.00%	1/1/1998	T14N-R9E, UMIAT MERIDIAN Sec 17: Unsurveyed, All Tide & Submerged lands Sec 18: Unsurveyed, All Tide & Submerged lands Sec 20: Protracted, All Tide & Submerged lands T14N-R9E, UMIAT MERIDIAN - TRACT A Sec 17: Unsurveyed, All Uplands Sec 18: Unsurveyed, All Uplands	1,894.00 acres	16.667%	William D. Armstrong - 3.33333%
8	State of Alaska ADL 388582	Kerr-McGee Armstrong Alaska	70.00% 30.00%	1/1/1998	T14N-R9E, UMIAT MERIDIAN Sec 16: Unsurveyed, All Tide & Submerged lands Sec 21: Unsurveyed, All Tide & Submerged lands T14N-R9E, UMIAT MERIDIAN - TRACT A Sec 16: Unsurveyed, All Uplands Sec 21: Unsurveyed, All Uplands	1,280.00 acres	16.667%	William D. Armstrong - 3.33333%

WORKING INTEREST OWNERS

KERR-McGEE OIL & GAS CORPORATION
16666 NORTHCHASE DRIVE
HOUSTON, TX 77060

ARMSTRONG ALASKA, INC.
700 17TH STREET, SUITE 1400
DENVER, CO 80202

ROYALTY INTEREST OWNERS

STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL AND GAS
550 WEST 7TH AVENUE, SUITE 800
ANCHORAGE, AK 99501-3560

OVERRIDING ROYALTY INTEREST OWNERS

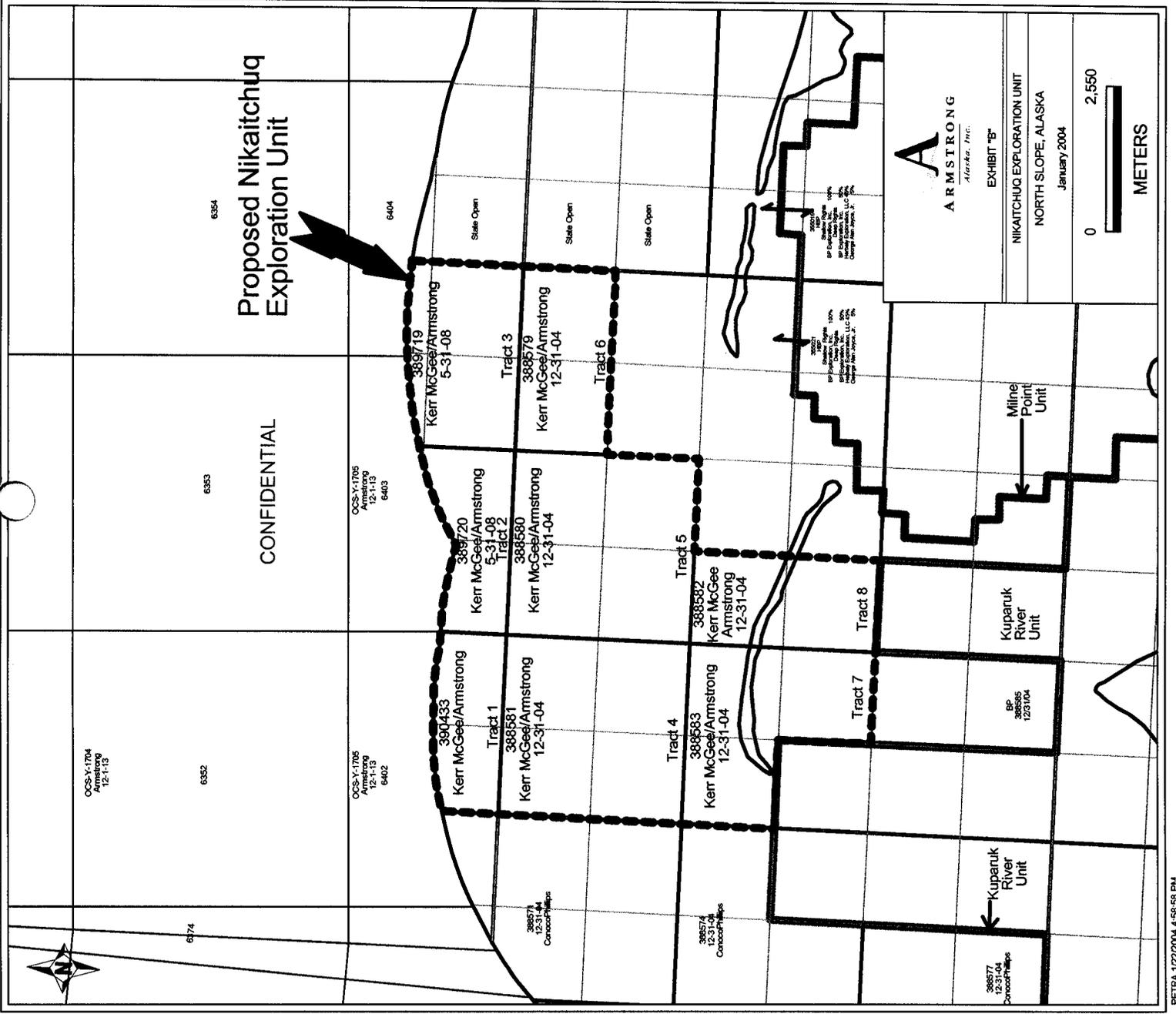
TRACTS 2 AND 3 ARE BURDENED BY OVERRIDING ROYALTIES AS STATED ABOVE HELD BY:

J. ANDREW BACHNER
P O BOX 82130
FAIRBANKS, AK 99708

KEITH C. FORSGREN
P O BOX 870529
WASILLA, AK 99687

**TRACTS 2 THROUGH 8 (INCLUSIVE) ARE BURDENED BY OVERRIDING ROYALTIES
AS STATED ABOVE HELD BY:**

WILLIAM D. ARMSTRONG
1900 EAST STANFORD AVENUE
CHERRY HILLS VILLAGE, CO 80113



**Proposed Nikaitchuq
Exploration Unit**

CONFIDENTIAL

A
ARMSTRONG
Alaska, Inc.

EXHIBIT "B"
NIKAITCHUQ EXPLORATION UNIT
NORTH SLOPE, ALASKA
January 2004



Exhibit "G"

Attached to and made a part of that certain NIKAITCHUQ Unit Agreement dated effective January 1, 2004

INITIAL PLAN OF EXPLORATION

SPY ISLAND, ALASKA

Outlined below is the initial Plan of Exploration for the proposed Nikaitchuq Unit. The proposed Unit will encompass 12967.99 acres of State land within the shallow waters of Harrison Bay, Alaska. The Unit is immediately north of both the Kuparuk River Unit and the Milne Point Unit. The Plan of Exploration is a 5 year forecast of planned unit exploration activities. Prospective intervals to be tested by this exploration program may include but are not limited to the Cretaceous Brookian Sandstone, the Jurassic Nuiqsut Sandstone and the Triassic Sag River Sandstone.

Historical Drilling Summary

The initial phase of exploration in the vicinity of the proposed Nikaitchuq Unit was in 1970, shortly after the discovery of the Prudhoe Bay Field. The Hamilton Brothers Milne Point #18-1 was one of the earliest wells drilled on the Milne Point structural trend. The well, drilled to 11,074' TD, tested water from the Triassic Ivishak/Permian Lisburne formations. The Triassic Sag River Formation ("Sag River") contained 50' of relatively tight oil-saturated sandstone; the interval was not tested. The well penetrated oil-saturated reservoir-quality sandstone in the Cretaceous Kuparuk Formation that flowed at a rate of 875 BOPD on DST. This early phase of exploration led to the exploitation of the Cretaceous section at Milne Point.

The next phase of deep exploration along the Milne Point trend began in 1982 with the drilling of the Conoco Milne Point Unit "C" #1. This well was drilled into the Lisburne Formation to a total depth of 10442'. The Ivishak Formation was wet. However, a core taken in the Sag River Formation recovered sandstone that was bleeding oil and gas. The Sag River tested tight on openhole DST. In 1984 another deep test was drilled on trend by Conoco, the Milne Point Unit L-1. It reached a total depth of 9421' TVD in the Ivishak Formation. The Sag River was cored, recovering 53' of very fine-grained sandstone with no visible porosity or oil staining. Wireline logs, core and mudlogs indicate sandstones of the Sag River Formation to be tight.

In 1984 several deeper exploration tests occurred along trend in the federal waters of the OCS targeting the seismically-defined Mukluk structure. The Sohio Mukluk #1 was drilled to a total depth of 9860'. The well penetrated 50' of porous Cretaceous Kuparuk sandstone ("Kuparuk") unconformably overlying the Ivishak Formation. The Sag River was not present in the well due to erosion associated with the Lower Cretaceous unconformity ("LCU").

In 1986, Tenneco drilled the Phoenix #1 well subsequent to the unsuccessful completion of the Mukluk well. This well, located approximately 12 miles east of Mukluk, encountered in excess of 90' of porous/permeable Triassic Sag River sandstone immediately beneath the LCU. The well was cored but never tested within this interval. Although unsuccessful, this well is significant for the fact that it demonstrates a marked overall improvement in Sag River sandstone reservoir quality relative to equivalent strata present in wells drilled to the south and southeast.

The next significant deeper exploration drilling along trend began in 1992, which highlighted the Jurassic exploration trend potential for this area. The Arco Kalubik #1 was drilled in 1992 to a total depth of 8273' within the Triassic Ivishak. The well penetrated an 85 ft thick section of Sag River with porosities ranging from 15% to 22%. The well also encountered approximately 160' of productive Jurassic Nuiqsut and Nechelik sandstone ("Nuiqsut") which tested at an average rate of 336 BOPD (unstimulated). The following year, Exxon drilled the Thetis Island #1 to a total depth of 8460' in the Ivishak sands. The well penetrated an 80 ft thick section of Sag River sandstone with porosities ranging from 16% to 24%. No cores or tests were taken from this water-saturated interval. However, it is noteworthy that there was well-developed and porous sandstone in the Sag River "A" (basal) and Sag River "B" intervals similar to the Phoenix #1 well, 12 miles to the north. An additional 45' of pay was encountered within the Nuiqsut interval. Testing of this interval yielded rates as high as 650 BOPD, with an average rate over the duration of the test of 120 BOPD. Both the Thetis Island #1 and Kalubik #1 encountered prospective sandstones with significant hydrocarbon shows in the Cretaceous Brookian section.

In 1996, BP undertook a deeper exploitation drilling program within the Milne Point Unit on the southern Milne Point structure; this included the MPU C-23, MPU K-33, E-13, E-13A and A-1 wells, which targeted deeper reserves contained within Sag River sandstones. These wells were marginally successful encountering thin Sag River (20-45ft) with porosities from 12 %-18 %, permeabilities ranging from 1md to 5md, and low recoveries due to tight rock and ineffective reservoir energy in the Sag River. Concurrently, a deeper test was drilled on the northwest Milne structure. The MPU F-33 was drilled to a total depth of 12,381' and logged greater than 50' of pay in the Sag River sandstone. The first several months of production averaged nearly 900 BOPD, with an original bottom hole formation pressure of 4440 PSI. The well produced over 314 MBO before being shut in in 1999. The MPU F-73A, an offset injection support well was drilled in 1998. In 2001 the F-33 well was side tracked and a 2000' horizontal leg within the Sag River sandstone was drilled. This horizontal well known as the F-33A averaged 1000+ BOPD in the first month, and is still producing over 600 BOPD with an expected ultimate recovery of over 1 MMBO.

The last pertinent deeper phase of exploration drilling occurred in 2003 when Pioneer/Armstrong drilled 3 wildcat wells to the southwest of the Nikaitchuq Unit within the Oooguruk Unit. The Ivik #1 penetrated reservoir-quality sands within the Brookian and Jurassic intervals. The Brookian sands had impressive mudlog hydrocarbon shows, but yielded water on formation test. The well also penetrated 60'+ of Nuiqsut sandstone pay and had an initial potential rate of 1300 BOPD after fracture stimulation. The Oooguruk #1, an offset well to the Ivik, encountered 45'+ sandstone pay in the Nuiqsut. This zone was never production tested, but yielded hydrocarbons on formation test.

Supporting Engineering data

Sag River pressure and oil property data has been collected, analyzed and supplied for key offset wells (F-33, F33a, C-1, Milne Point Unit wells). This data serves as the basis for oil column assumptions, deliverability and recovery estimates for the Milne structure. To date, there has been no water level established for the Sag River formation within the northwest Milne block. Therefore, we have evaluated pressure, petrophysical and seismic data to provide a best estimate of possible oil/water contact levels at northwest Milne. The range of contact levels was estimated using the measured and a theoretically calculated oil pressure gradient for the Sag River oil of 0.29 psi/ft. This oil gradient was then plotted against the known Milne Structural trend water pressure gradient, defined by several key wet Ivishak tests on structural trend. Integrating the

pressure data with identified possible geologic spill points for the Northwest Milne structure yields an oil/water contact of approximately -9240' subsea.

The range of Sag River oil mobility parameters is derived from oil produced from MPU offset wells. The range of produced oil gravity is 36-40° API, with oil viscosity in the range of 0.26-0.30 centipoise. Overall deliverability of the Sag reservoir will be addressed by this exploration program.

The Jurassic hydrocarbon trap is assumed to be controlled by the same bounding western Milne trapping fault that controls the slightly younger Kuparuk "A" accumulation. To date, no wet Jurassic wells have been drilled on this sand trend. As a consequence, the range of potential accumulation limits for the Nuiqsut objective has a large amount of uncertainty associated with it. The # 1 NW Milne Point well produced 26.5° API oil from the Kuparuk "A" reservoir. Similar oil properties are assumed for the Jurassic sandstone reservoirs.

Other prospective intervals targeted in the Cretaceous Middle Brookian have been characterized by strong oil shows in offsetting wells. Many of these shows reflect more of a light hydrocarbon signature within the section. Rate/commerciality issues will be addressed for these intervals by this proposed exploration program.

Nikaitchuq Unit Objectives

Triassic Sag River Sandstone

The Phoenix well, when taken in regional context with exploration drilling on the Colville High, development drilling at Prudhoe Bay, early exploration drilling in the NPRA and exploitation drilling along the Milne Structure establishes an overall prospective trend for improved Sag River Sand quality and thickness to the north/northwest over the northwest Milne structure and within our proposed Nikaitchuq Exploration Unit. (Attached: Nikaitchuq Prospect cross section, Sag River depth Structure Map, Regional Sag River Sandstone cross section, strike oriented arbitrary depth seismic section and dip oriented arbitrary depth seismic section)

Jurassic Nuiqsut Sandstone

Delineation by previous exploration drilling of the southwest/northeast regional Jurassic sand trend highlights the potential for Nuiqsut sand development over the Northwest Milne Horst. The Jurassic event mapped has been tied to 3-D seismic and carried from the Thetis Island #1, Ivik #1, Oooguruk #1 and Kalubik #1 wells. The Jurassic is the secondary interval of prospective interest within our proposed Nikaitchuq Exploration Unit. (Attached: Included: previously referenced Nikaitchuq Prospect Cross section, strike oriented arbitrary depth seismic section and dip oriented arbitrary depth seismic section and a Jurassic Trend Montage containing the regional sand trend, a simplified well cross section and a Jurassic structure map over the proposed unit)

Cretaceous Brookian Sandstone

Sand presence with good reservoir quality and hydrocarbon shows within the Brookian interval in wells directly to the southwest highlight the seismically identified Brookian Lowstand feature as our third prospective interval within the proposed Nikaitchuq Exploration Unit. (Attached: previously referenced Nikaitchuq Prospect cross section and Brookian Lowstand / Toe of Slope Potential Montage containing a gross interval isopach showing potential limits of sand deposition and three arbitrary depth seismic lines through the mounded low stand feature)

Drilling Program

Currently, three wells are planned for the proposed Nikaitchuq Exploration Unit. The first well will be drilled during the 2004 Winter Drilling Season. Based on the results from this initial test, geologic studies and seismic reprocessing are planned in 2005 leading to a second Exploration Well for the 2006 Winter Drilling Season, or earlier. The proposed second well will test the limits and continuity of the primary Sag reservoir within the Nikaitchuq Unit. Following results of the second well, a third Exploration Well is planned for the 2008 winter drilling season or earlier, that will target additional exploration objectives in the Cretaceous Brookian interval. The planned locations for each of these Exploration Wells are depicted upon the CONFIDENTIAL displays submitted to the Department in support of the Nikaitchuq Exploration Unit application. The intended bottom-hole locations and depths are set forth below. The Parties reserve the right to modify the order in which these wells are to be drilled. Following drilling of the first well, the location and drilling depth of subsequent wells may be adjusted pursuant to the results of the prior wells.

Well (Well name)	Surface/Bottomhole Location	Total Depth true vertical
1 st Exploration Well (Nikaitchuq #1)	SHL 507' NSL x 1486' EWL Section 16, T14N R9E BHL 620' NSL x 2589' WEL Section 9, T14N R9E	9150 ft
2 nd Exploration Well (Nikaitchuq #3)	SHL 507' NSL x 1486' EWL Section 16, T14N R9E BHL 1167' SNL x 2875' EWL Section 4, T14N R9E	9600 ft
3 rd Exploration Well (Nikaitchuq #4)	SHL 507' NSL x 1486' EWL Section 16, T14N R9E BHL 330' SNL x 330' WEL Section 20, T14N R9E	7500 ft

Nainaitchuq Exploration Unit Proposed Plan of Exploration

