

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

APPROVAL OF THE  
REVISED NICOLAI CREEK UNIT AREA,  
REVISED PARTICIPATING AREAS A and B,  
AND  
FORMATION OF THE BELUGA PARTICIPATING AREA

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

March 10, 2005

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## **I. DECISION SUMMARY**

Aurora Gas, LLC (Aurora), as Nicolai Creek Unit (NCU) operator and sole working interest owner, applied to revise the existing participating areas, form the Beluga Participating Area, and revise the Nicolai Creek Unit Area (the Application). The State of Alaska Department of Natural Resources, Division of Oil and Gas (the DNR or the Division, as appropriate) approves the Application as follows:

1. Participating Area A is revised to reflect the current geologic and engineering interpretation for the reservoir and is renamed the South Participating Area (SPA).
2. Participating Area B is renamed the North Participating Area (NPA).
3. The new Beluga Participating Area (BPA) is approved.
4. A portion of federal lease AA-8426 is added to the NCU and the aerial extent of the Unit is revised to encompass the three PAs. As before, the unit area is limited to its approved participating areas.
5. Aurora shall work with the Division's Royalty Accounting Section to revise all royalty and operator reports back to November 1, 2003. The production must be allocated based on the approved tract participation schedules for each participating area.

Aurora submitted geologic and well data that indicate the revised SPA and proposed BPA are capable of producing or contributing to the production of hydrocarbons in paying quantities, which justifies revising the SPA and the NCU, and forming the BPA.

Attachment 1 is a map showing the old and new NCU boundary. Attachment 2 is a map showing the old and new SPA boundary. Attachment 3 is Exhibit A to the NCU Agreement showing the approved boundaries for the NCU, BPA, SPA, and NPA.

The Division also approves Exhibits B, B-1, B-2 and B-3 to the NCU Agreement (Attachments 4 through 7), the tract allocation schedules for each of the PAs. The tract allocation schedules equitably allocate production and costs among the leases in the NCU.

## **II. BACKGROUND AND APPLICATION HISTORY**

Texaco formed the Nicolai Creek Unit and Participating Areas A and B in 1968. It drilled the Nicolai Creek State No. 1-A well (NCS-1A) in the Participating Area B and tested the well, but no facilities or pipelines were built to facilitate sustained production. It also drilled the Nicolai Creek No. 2 well (NCU-2) and the Nicolai Creek No. 3 well (NCU-3). NCU-2 tested gas from Participating Area A for nine months in 1968 and 1969. Facilities and a pipeline were installed for Participating Area B and NCU-3 produced from Participating area B from 1969 through 1977.

In 1973, the NCU boundary contracted to the discontinuous lands within Participating Areas A and B. Unocal and Marathon acquired the field in 1988, each holding 50% working interest, and Unocal was the designated unit operator.

Beginning in 1998, AS 38.05.180(f)(5) provided for a temporary royalty reduction to encourage development of certain fields in the Cook Inlet Basin, including Nicolai Creek. The Statute establishes a royalty rate of five percent on the first 25,000,000 barrels of oil and 35,000,000,000 cubic feet of gas produced from eligible fields within 10 years of initial production for sale, if production for sale commenced before January 1, 2004. To qualify for the reduced royalty rate on production from the Nicolai Creek Field, the operator was required to submit a written plan to the Alaska Oil and Gas Conservation Commission (AOGCC) in accordance with AS 31.05.030(i). This generous economic incentive was intended to encourage Unocal to bring the Nicolai Creek Unit on production earlier than planned.

In November 2000, Unocal and Marathon assigned their interests to Aurora. Aurora became the operator with 100 percent working interest in the NCU. Aurora successfully restarted sustained production in the NCU-3 well in September 2001 and the AOGCC approved its written plan submitted under AS 31.05.030(i), which qualified the field for the royalty reduction.

By letter date July 12, 2002, Aurora requested an order from the AOGCC allowing a spacing exception to drill and test the Nicolai Creek Unit No. 1B (NCU-1B) and No. 8 (NCU-8) wells and to recompleat and test the NCU-2 well. The AOGCC issued Conservation Order No. 478 (Attachment 9), on September 5, 2002, which approved Aurora's request for spacing exceptions but provided that the wells could not be placed on regular production until the AOGCC took additional action to offset any advantage Aurora may have had over other mineral owners by reason of the wells having been drilled to the exception locations.

Aurora did not drill the NCU-8 well because it encountered a shallow obstruction while driving conductor pipe, but permitted and drilled NCU No. 9 (NCU-9) as a replacement well.

On September 2, 2003, Aurora submitted an application to the Division for approval to revise the participating areas and the NCU boundary. The Division immediately notified Aurora that its application was incomplete and began working with Aurora to remedy the deficiencies. It quickly became apparent that the process was going to take an extended period of time due to the number of parties involved, and the unresolved land ownership and title issues. The Division invited the Mental Health Trust Land Office (TLO) to participate in all pertinent Application communications, discussions, and meetings between Aurora and the Division because they are an adjacent mineral interest owner. As early as August 12, 2003, the Division's goal was to include the TLO throughout the process and arrive at a fair decision that the TLO would support.

In the interim, Aurora proposed to report production from the NCU-1B and NCU-2 wells to



the Division at a five percent royalty rate, and production from the NCU-9 to the Bureau of Land Management (BLM) using a 12.5 percent royalty rate. On September 25, 2003, the Division, the TLO and BLM agreed with this interim royalty reporting payment methodology, on condition that, upon approval of the final Application, Aurora shall submit revised royalty and operator reports to the Division and BLM retroactive to the first day of production (See Attachment 12).

On October 9, 2003, Aurora submitted a revised Application, to the Division, along with additional supporting confidential geologic and engineering data.

On October 16, 2003, the AOGCC issued Conservation Order No. 478A (Attachment 10) allowing regular production from the NCU-1B, NCU-2 and NCU-9 wells using the interim reporting methodology. In November 2003, Aurora completed pipeline and facility construction for PA-B and initiated production from the NCU-2 and NCU-9 wells.

The Division worked with Aurora, the BLM and the TLO on the Application, and on November 4, 2003, the Division determined that the Application included all of the items listed in 11 AAC 83.306 and constituted a complete application for public notice.

The Division issued a public notice of the Revised Application on November 5, 2003, which DNR posted on the State's web page. The notice was published in the *Anchorage Daily News* and the *Peninsula Clarion* on Sunday, November 9, 2003. The public notice invited interested parties and members of the public to submit comments on the Application by December 9, 2003.

The Division received two comment letters in response to the public notice. The first letter, submitted by the TLO to document its involvement in the process of approving the Application, is attached to this Decision (Attachment 11). The second letter was from the Kenai Peninsula Borough, which reviewed the proposed unit expansion for consistency with the Kenai Peninsula Borough Coastal Management Program enforceable policies. The Kenai Peninsula Borough had no objection to approval of the Application.

On January 7, 2004, Aurora submitted a request to suspend the Application process until such time that the technical details could be resolved. On January 8, 2004, the Division approved the suspension of the Application and encouraged Aurora to continue working with the interested parties to reach agreement on the revised unit and participating area boundaries.

After working with the various parties, on and off for approximately one year, on January 21, 2005, Aurora submitted a final, revised Application that included new tract participation schedules and a proposal to create an additional participating area (BPA). The Application proposes to include a portion of federal lease AA-8426, approximately 45.30 acres, in the NCU. Aurora is the only working interest owner, but there are approximately 16 overriding royalty owners.

There is geologic and engineering evidence to support the formation of the BPA to develop the Beluga Reservoirs within the revised NCU. The data also supports revising the SPA to develop the Tyonek Reservoirs under a unified plan of development.

### **III. PARTICIPATING AREA DECISION CRITERIA**

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

Under 11 AAC 83.303(a), 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. Subsection .303(b) sets out six criteria 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 subsection .303(a) and the Director's conditional approval of the Application.

A participating area 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 the BPA and the revision of the SPA has no environmental impact. This Decision is an administrative action and does not authorize any surface 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 has less impact on the environment than development on a lease-by-lease basis.

#### **2) The Geological and Engineering Characteristics of the Proposed PAs**

The State's regulations provide that a unit must encompass the minimum area required to include all or part of one or more oil or gas reservoirs, or potential accumulations. 11 AAC

83.356(a). DNR technical staff evaluated all data provided by the unit operator including geologic cross sections, structure maps, electric log analyses, and interpreted seismic data to determine if the proposed unit area met the regulatory criteria.

The reservoir sandstones of the NCU belong to the Oligo/Miocene Tyonek and Beluga Formations. Only those sands of the Tyonek Formation are currently producing. Deposition of these sands occurred within the Cook Inlet Basin, a feature characterized as an elongate, northeast trending, fault-bounded forearc basin that extends from the Matanuska Valley south along the Alaska Peninsula. The northwestern reaches of the Cook Inlet forearc basin are defined by a series of tight anticlines and associated structures that deform the Tertiary section and provide traps for both oil and gas. These features are part of a transpressional regime that results from strain transfer between the Castle Mountain Fault to the north and Bruin Bay Fault to the west. The structures manifested within the NCU have evolved through such processes.

Subsurface geology of the NPA of the NCU indicates a combination structural and stratigraphic trap with gas trapped in Upper Tyonek sandstones. Sandstone units are draped over a four-way closure anticline formed along a southward-plunging axis on the west side of an eastward-verging fault (interpreted to be the northern extension of the Trading Bay fault).

A similar setting exists in the subsurface of the SPA of Upper Tyonek gas bearing sandstones trapped within a fold and closed against a dominant west-east cross-fault (the Nicolai Cross Fault) that splays off the aforementioned Trading Bay Fault to the east. The Nicolai Cross Fault appears to separate the structure of the NPA from that of the SPA. From a maximum of approximately 500-600 feet in the east, the fault throw diminishes westwards.

Within the NPA and SPA, reservoir sandstones are restricted to the Upper Tyonek Formation. Eight individual sand members have been identified from log correlation and mapped across the Nicolai Creek field. Within the Nicolai Creek field, individual sands have been assigned names based on standardized industry palynological zonation. The sandstones are within the Carya 2 palynological zone and have been subdivided using an appropriate numeric designation (2-1.1, 2-1.2, 2-2.1, 2-2.2, 2-2.3, 2-4.2, 2-5.1, and 2-6.1). Log data indicate the NCU wells show the relative conformity of the shallower Carya 2-1 through Carya 2-23 section with some possible expansion of the deeper Carya 2-4.2 through Carya 2-6.1 section. The apparent expansion of the deeper section in the NCU-2 well could be explained by faulting. Gas appears trapped in the Upper Tyonek Formation in unconsolidated, non-marine sandstone reservoirs between 1,680 and 3,475 feet subsea true vertical depth (SSTVD). Since the Tyonek reservoirs of both the NPA and SPA are stacked sandstone bodies, the composite areas of the reservoir extent, which is controlled by structure and sandstone distribution and confirmed by seismic and well data, are summed together to define the outline of the SPA and NPA areas.

The BPA is defined by the surface acreage covering the anticipated productive Beluga Formation sandstones. Since the Beluga reservoirs appear to be stacked sandstone bodies, the composite areas of the reservoir extent, which is controlled by structure and sandstone distribution and confirmed by seismic and well data, are summed together to define the outline of the BPA.

### **3) Prior Exploration Activities in the Nicolai Creek Unit**

The NCU was formed by Texaco on February 29, 1968 after discovering gas in the NCS-1A and NCU-2 wells in 1966 and the NCU-3 well in 1967. NCS-1A produced an average 1.3 MMSCF/day of dry gas from December 1968 to February 1969 and NCU-2 produced an average of 0.4MMSCF/day of dry gas from October 1968 through November 1969. Upon completion of the aforementioned periods of productivity both NCS-1A and NCU-2 were shut-in. NCU-3, produced an average of 0.3 MMSCF/day dry gas from April 1969 through October 1977, when it was shut-in.

During the period 1970 to 1988 three wells, NCU-4 (1970), NCU-5 (1972) and NCU-6 (1988) were drilled and they proved to be dry. In 1988, Unocal and Marathon acquired the field, each holding a 50% working interest. Unocal was designated the NCU operator. In 1991, Unocal worked over NCU-4 but failed to achieve commercial production.

In 2000, Aurora took over the unit as operator with a 100% working interest. In 2000 and 2001, Aurora worked over NCU-3, sidetracked NCS-1A to the NCU-1B location, and repaired NCU-2.

In 2001, Aurora installed production facilities and a pipeline for the NCU-3. It commenced production at an average rate of 1.1 MMSCF/D with an average of 35 barrels of water per day and continued to produce February 2004 when a workover to add additional perforations was completed. The well is currently shut-in but production is expected to be restored in 2005 at 0.5 to 1.0 MMSCF/D.

In 2003, Aurora acquired a new 3-D seismic survey and drilled NCU-9 with a bottom-hole location between the two participating areas but outside of the NCU. Aurora also established new facilities and a pipeline to the SPA's drill site in 2003. During 2003, Aurora produced gas from NCU-9 and NCU-2 at rates of 2.3 and 2.5 MMSCF/Day respectively.

### **4) The Applicant's Plan for Development of the Participating Areas**

The Application included a revised Plan of Development (POD) for the NCU. The new POD is approved for the period beginning on the effective date of this Decision through December 31, 2005.

The POD proposes extensive review and interpretation of existing 3D seismic data, which will possibly lead to a new development well targeting the stacked Carya 2 (Upper Tyonek) channel sands. The unit operator also plans to reestablish production in the NCU-3 and continue production from NCU-2 and the NCU-9 wells. The NCU No. 1B well is currently shut-in pending further evaluation.

Production rate is declining rapidly in the NCU-2, so Aurora plans to recomple the well in the Tsuga 2-8.2 and 2-8.3 sands with the hopes of producing those intervals. The NCU-9 well produces from the Tsuga 2-8-1 sands, and Aurora plans additional recompletions in future years.

NCU-3 produced sales gas between October 3, 2001 when the pipeline was installed, and February 2004, when the current work over program began. Aurora plans to commingle production of the deeper Tsuga 2-8.1 perforations with the shallower Carya 2-1.1, 2-1.2, and 2-2.1 in the NCU-3 well.

## **5) The Economic Costs and Benefits to the State**

Approval of the proposed BPA 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 participating areas are far outweighed by the additional royalty and tax benefits derived from production.

The Division finds Aurora's tract allocation schedules acceptable for allocating production and costs among the leases in the participating areas. Aurora shall work with the Division's Royalty Accounting Section to submit royalty and operator reports to properly allocate the production from the NCU-2 and NCU-9 wells to the SPA and BPA, back to November 1, 2003. Aurora shall submit revised royalty and operator reports for the NPA back to November 1, 2003 to correct inaccuracies in the reports.

The production will be allocated based on the approved tract participation schedules for each participating area. Aurora must report production from the SPA, NPA, and BPA using production accounting unit codes NCPA, NCPB, and NCBE, respectively.

## **IV. FINDINGS**

### **1) Conservation of Natural Resources**

The formation of oil and gas units, as well as the formation of participating areas within units, generally conserves hydrocarbons. Coordinated development of leases held by diverse parties maximizes total hydrocarbon recovery and minimizes waste. Formation of the BPA



will provide for efficient, integrated development of the Beluga reservoir within the NCU. A comprehensive plan of development governing the area will help avoid duplicative development efforts on and beneath the surface.

Producing hydrocarbon gas from the area through the NCU facility reduces the incremental environmental impact of the production. Creating the BPA will help maximize gas recovery, while minimizing negative impacts on all other natural resources.

## **2) Prevention of Economic and Physical Waste**

Generally, the formation of a participating area 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 participating area, 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 participating area promotes complete development of a reservoir with variable productivity across adjoining leases. Commingling production from the Tyonek and Beluga Formations in the NPA will maximize drilling and completion efficiency and result in lower development costs, possibly extending the economic life of the field.

## **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 formation of the BPA 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 NCU Agreement provides for accurate reporting and record keeping, and royalty settlement. These all protect the state's interest.

The proposed BPA and revised SPA protect the economic interests of the working interest owner and the royalty owners.

## **V. DECISION**

Based on the facts discussed in this Decision and the administrative record, I make the following Findings and Decision:


- 1) The proposed acreage is underlain by hydrocarbons and known and reasonably estimated to be capable of production or contributing to production in sufficient quantities to justify the formation of the BPA, the revision of the SPA, and the revision of the NCU area.

- 2) The geological and engineering data justify the inclusion of the proposed acreage within the participating areas 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 Beluga Participating Area (BPA) is limited to the stratigraphic interval in the Beluga Formation encountered between 1320 and 1477 feet (measured depth) in NCU-9 (API 50-283-20102).
- 4) The Gas Pool PA-A, which is renamed the Southern Participating Area (SPA), is limited to the stratigraphic interval in the Tyonek Formation encountered between 2422 and 2918 feet (measured depth) in NCU-2 (API 50-283-10021).
- 5) The Gas Pool PA-B, which is renamed the Northern Participating Area (NPA), is limited to the stratigraphic interval in the Beluga and Tyonek Formations encountered between 1494 and 2238 feet (measured depth) in NCU-3 (API 50-283-20003).
- 6) Formation of the BPA and revision of the SPA 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 areas.
- 7) The allocations of production and costs for the tracts within the NCU participating areas (Exhibits B-1, B-2, and B-3), Attachments 5, 6, and 7 to this Findings and Decision are approved.
- 8) Approval of the formation of the BPA, revision to the SPA, revision to the NCU, and approval of the attached Exhibits to the NCU Agreement are retroactively effective to November 1, 2003.
- 9) Aurora shall report all production from the SPA, NPA, and BPA to Production Accounting Units NCPA, NCPB, and NCBE, respectively.
- 10) Aurora shall submit revised operator and royalty reports for accounting unit code NCPB from November 1, 2003 forward in order to correct inaccuracies in the reports.
- 11) Aurora shall submit separate original operator and royalty reports for accounting unit codes NCPA and NCBE from November 1, 2003 forward. Aurora shall also provide the royalty accounting section copies of all revised AOGCC reports (Form 10-422) from November 1, 2003 forward.

For these reasons I hereby approve the formation of the Beluga Participating Area, the revision and renaming of the South Participating Area, the renaming of the North

Participating Area, and the revision of the Nicolai Creek Unit area. Since the Application was approved by the BLM on March 1, 2005 retroactively effective November 1, 2003, this Decision is also retroactively effective to November 1, 2003.

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](mailto:dnr_appeals@dnr.state.ak.us). This decision takes effect immediately. If no appeal is filed by the appeal deadline, this decision becomes a final administrative order and decision of the department on the 31st day after issuance. 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.

*for*   
Mark D Myers  
Division of Oil and Gas

3/14/05  
Date

Attachments:

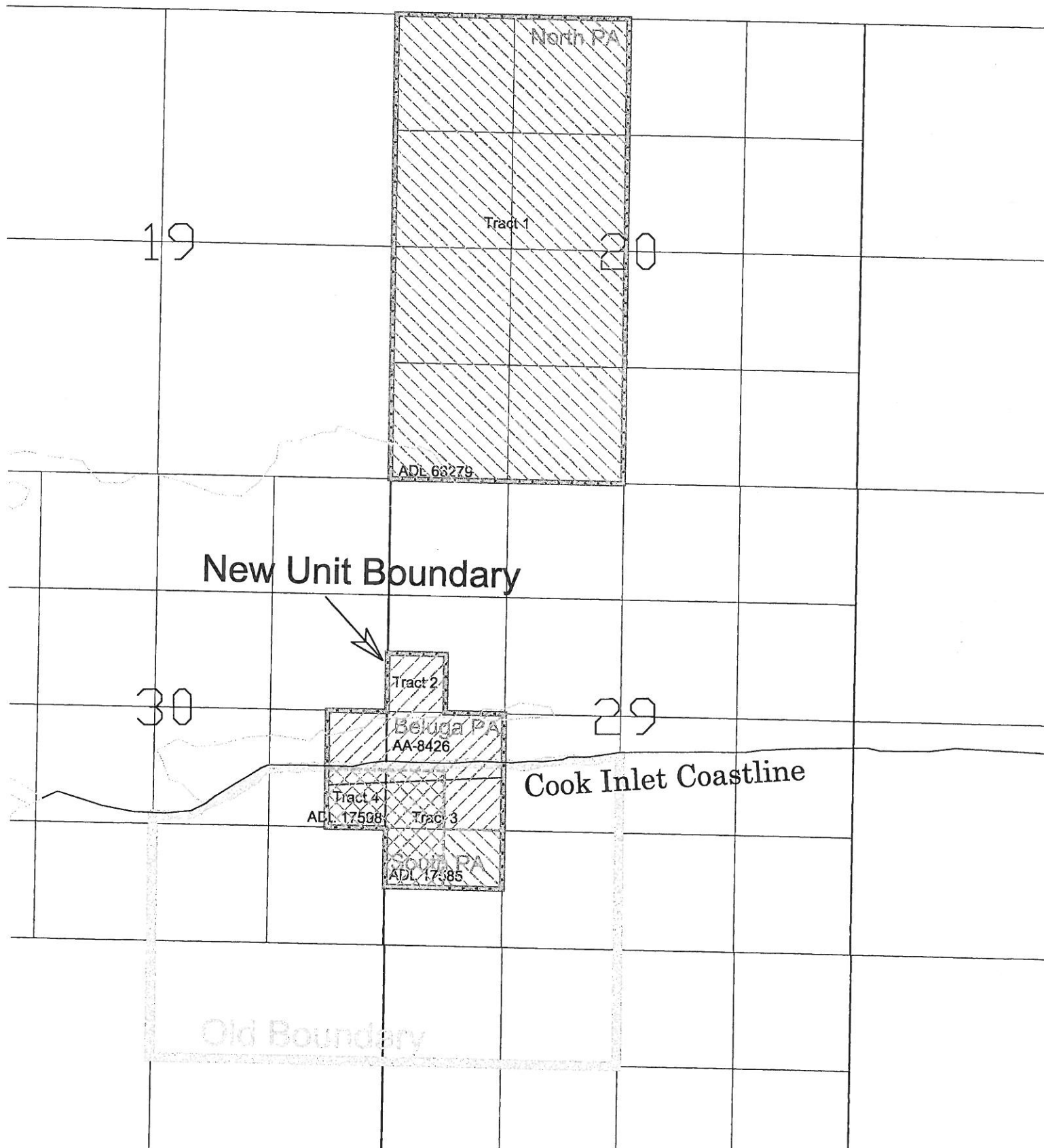
1. Map of old and new NCU boundaries
2. Map of old and new SPA boundaries
3. Exhibit A to the NCU Agreement (Map of Unit and Participating Areas, 3 pages)
4. Exhibit B to the NCU Agreement (NCU Tract Schedule)
5. Exhibit B-1 to the NCU Agreement (Tract Participation Schedule for the North PA)
6. Exhibit B-2 to the NCU Agreement (Tract Participation Schedule for the South PA)
7. Exhibit B-3 to the NCU Agreement (Tract Participation Schedule for the Beluga PA)
8. Exhibit G to the NCU Agreement (Plan of Development)
9. AOGCC Conservation Order No. 478
10. AOGCC Conservation Order No. 478A
11. TLO letter commenting on the public notice



# Attachment 1

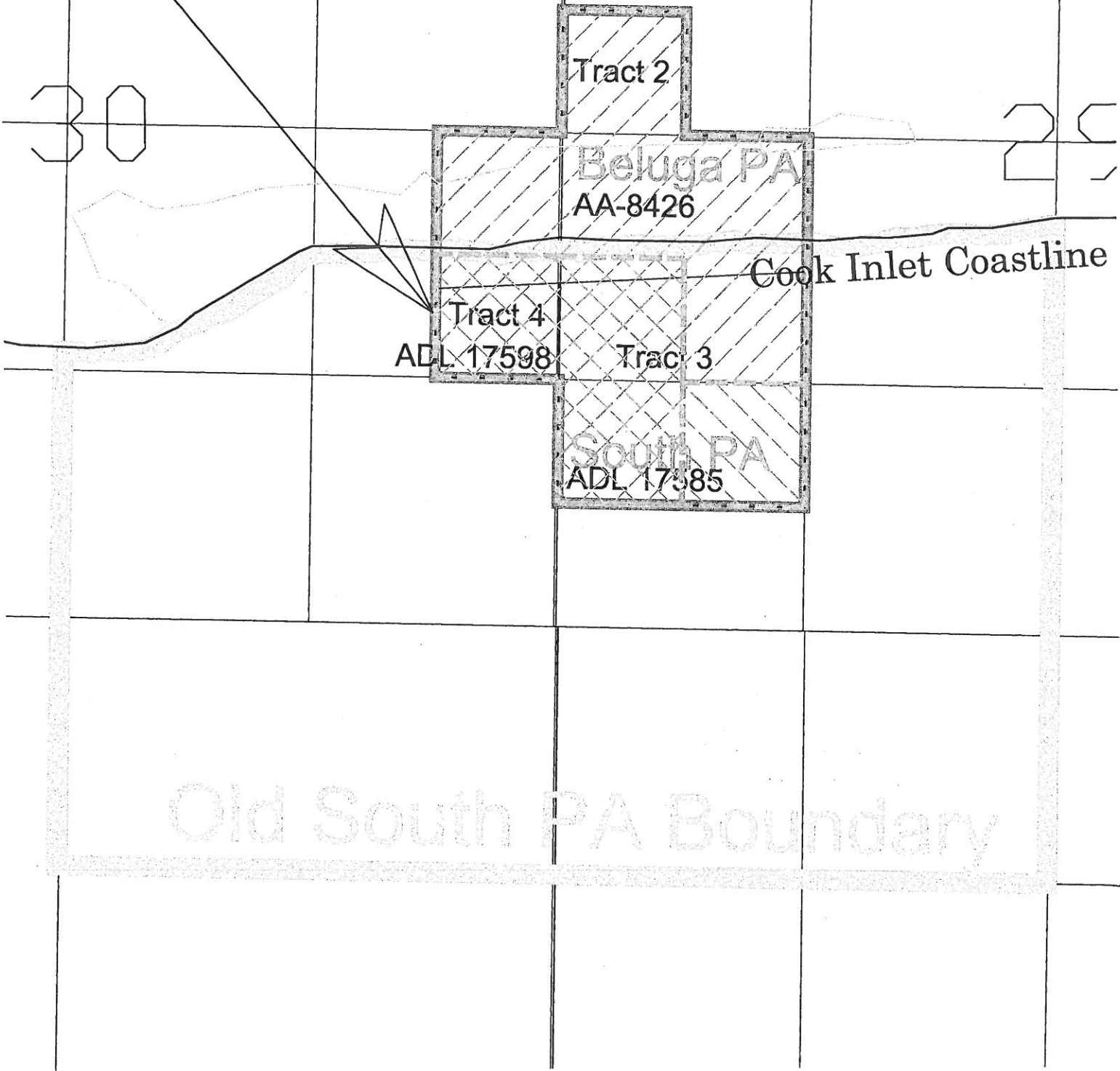
T 11N, R 12 W, Seward Meridian

Nicolai Creek Unit



Attachment 2

# New South PA Boundary



Protracted Sections 19,  
20, 29 and 30, T11N,  
R12W, SM, AK

Nicolai North PA,  
Nicolai South PA &  
Beluga PA Tracts

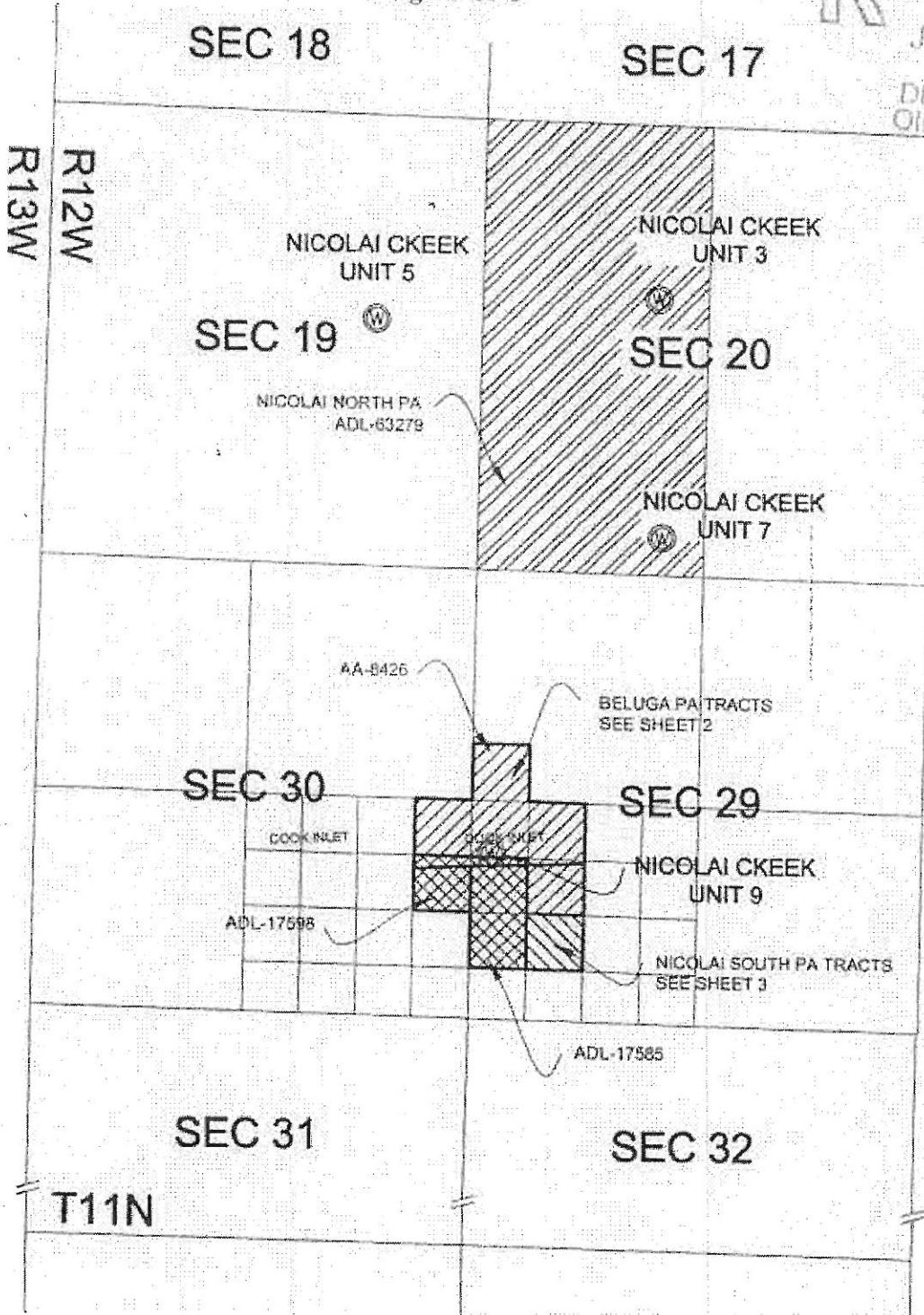


EXHIBIT "A"  
Page 1 of 3

REG

JAN 21 2005

DIVISION OF  
OIL AND GAS



SHEET: 1 of 3

DRAWN BY	AM
CHECKED BY	AM
HORIZ. SCALE	1" = 100'
VERT. SCALE	N/A
SHEET	1 of 3

P.O. Box 468 Seldovia, AK 99669

**McLane Consulting Group**  
Testing

TEL 907.883.4318 FAX 907.883.3265

**Aurora Gas, LLC**

DATE OF FIELD WORK 9/15/04 FIELD BOOK NO. 0407 JOB NO. 04008

REV	DATE	DESCRIPTION	BY

**ALASKA**  
DIVISION OF OIL AND GAS  
REG-4

# NICOLAI SOUTH PA TRACTS within Sec 29 and 30 T11N R12W SM AK

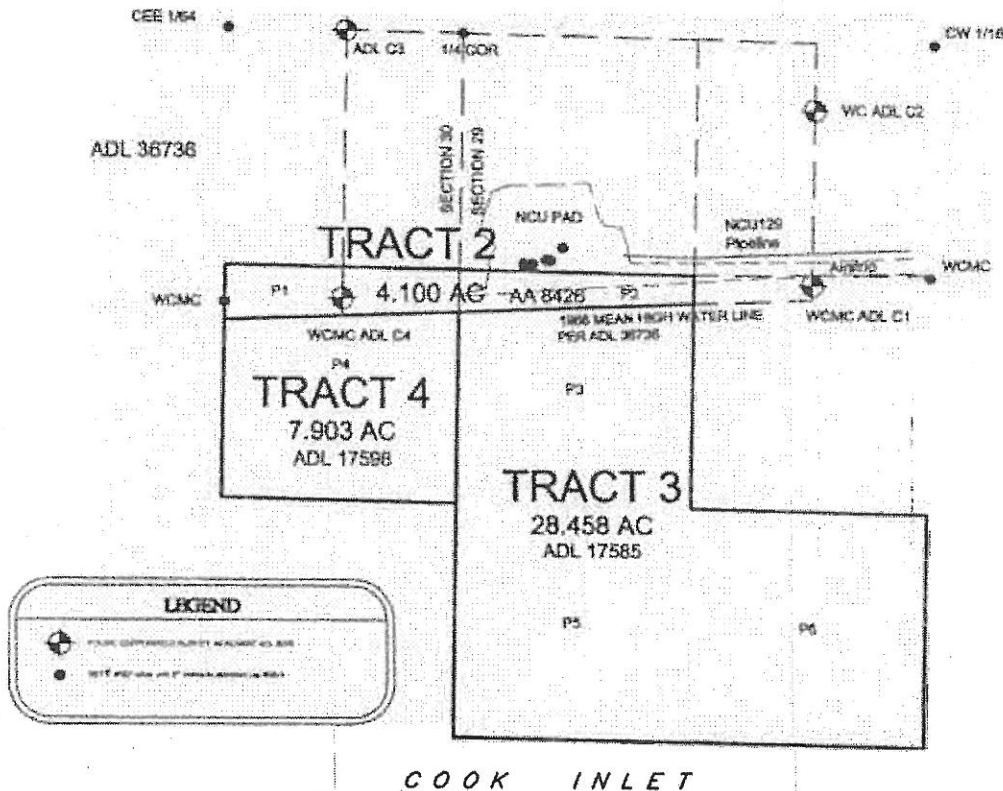


EXHIBIT "A"  
Page 2 of 3

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JAN 21 2005

DIVISION OF  
OIL AND GAS



PARCEL	LEGAL	ACRES	SURVEY
P1	SE 1/4 NE 1/4 SEC 29 LYING NORTH OF MHW	2.5486	AA 8426
P2	SW 1/4 NW 1/4 SW 1/4 LYING NORTH OF MHW	1.7515	AA 8426
P3	SW 1/4 NW 1/4 SW 1/4 LYING SOUTH OF MHW	8.482	ADL 17585
P4	SE 1/4 NE 1/4 SEC 29 LYING SOUTH OF MHW	7.903	ADL 17586
P5	NW 1/4 SW 1/4 SW 1/4	5.984	ADL 17585
P6	NE 1/4 SW 1/4 SW 1/4	5.982	ADL 17585

**NOTES**

1. BEARING AND DISTANCES SHOWN HEREON ARE QMS.
2. HORIZONTAL COORDINATES ARE ALASKA STATE PLANE ZONE 4 NORTH BASED ON THE CHARTERED CORNER MARKS CAP SEC. 25 T11N R12W SM AK ADL 36736.
3. THE UPLAND AND TIDELAND AREAS SHOWN HEREON ARE BASED ON THE PARCELS SURVEYED FOR ADL 36736 AND THE MONUMENTS SHOWN HEREON AS RECOVERED THIS SURVEY.
4. THE MEAN HIGH WATER LINE OF COOK INLET WAS OBTAINED FROM DATA SHOWN ON ADL 36736 WHICH NOTED THIS LINE WAS ESTABLISHED FROM DATUM PUBLISHED BY USACE ON TIDAL BENCH MARKS AT NORTH POPELANDS COOK INLET OBSERVED BY THE USACE JULY 22-AUGUST 12, 1989.

GRAPHIC SCALE



( IN FEET )  
1 inch = 400 ft.

SHEET: 3 of 3

DRAWN BY: DATE OF FIELD WORK: 6/05/04 FIELD BOOK NO.: 0407 JOB NO.: 043038	<b>Aurora Gas, LLC</b>	NO. DATE DESCRIPTION BY 1 1/15/04 1000-1 2 1/15/04 1000-1 3 1/15/04 1000-1 4 1/15/04 1000-1 5 1/15/04 1000-1 6 1/15/04 1000-1 7 1/15/04 1000-1 8 1/15/04 1000-1 9 1/15/04 1000-1 10 1/15/04 1000-1	
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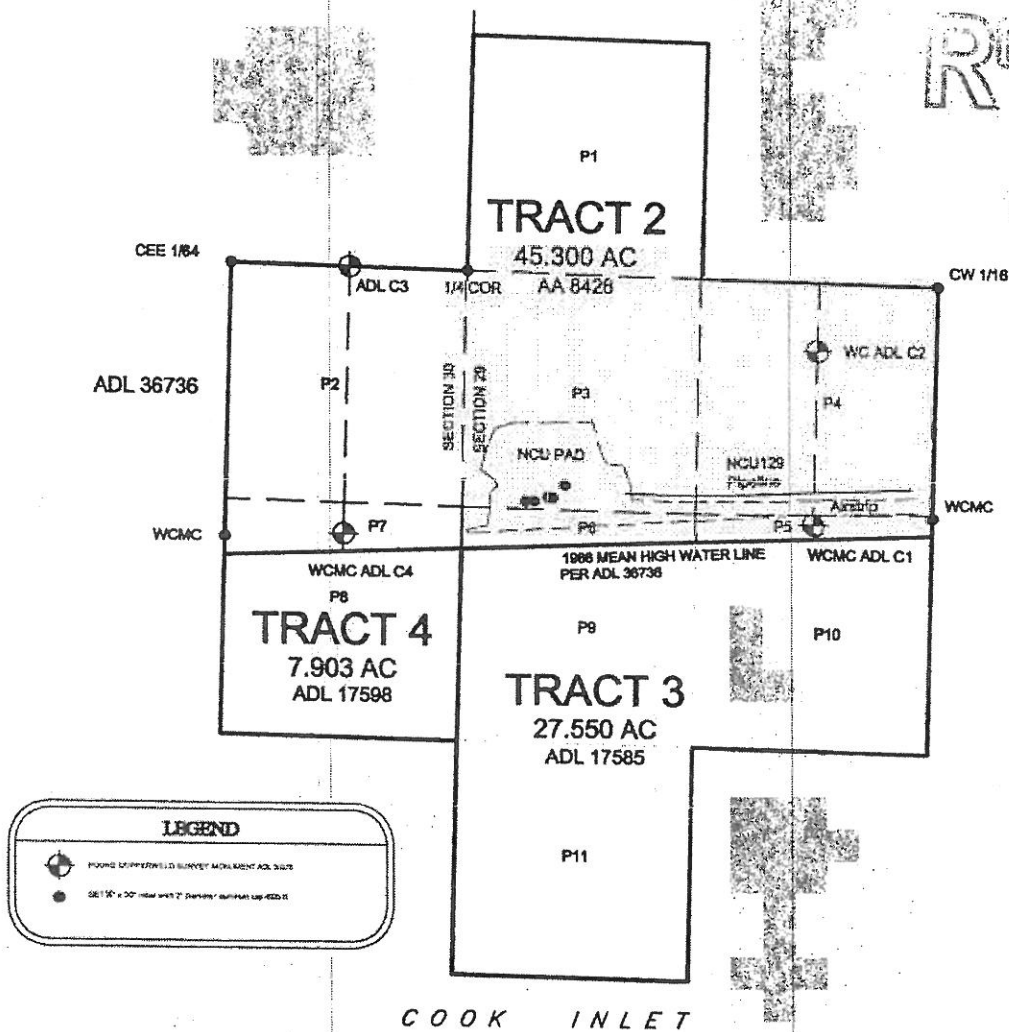
# BELUGA PA TRACTS within Sec 29 and 30 T11N R12W SM AK

EXHIBIT "A"  
Page 3 of 3



RECEIVED  
JAN 21 2005

DIVISION OF  
OIL AND GAS



**LEGEND**

FOUND SURVEY MONUMENT ADL 3015  
 SET 1/4" x 30" steel with 7" diameter aluminum cap 4225 II

PARCEL	LEGAL	ACRES	SURVEY
P1	SW 1/4 SW 1/4 NW 1/4	10.000	AA 8426
P2	NE 1/4 NE 1/4 SE 1/4	10.002	AA 8426
P3	NW 1/4 NW 1/4 SW 1/4	9.982	AA 8426
P4	NE 1/4 NW 1/4 SW 1/4	9.850	AA 8426
P5	SE 1/4 NW 1/4 SW 1/4 LYING NORTH OF MHW	1.3570	AA 8426
P6	SW 1/4 NW 1/4 SW 1/4 LYING NORTH OF MHW	1.7515	AA 8426
P7	SE 1/4 NE 1/4 SE 1/4 LYING NORTH OF MHW	2.3485	AA 8426
P8	SE 1/4 NE 1/4 SE 1/4 LYING SOUTH OF MHW	7.903	ADL 17598
P9	SW 1/4 NW 1/4 SW 1/4 LYING SOUTH OF MHW	8.482	ADL 17585
P10	SE 1/4 NW 1/4 SW 1/4 LYING SOUTH OF MHW	9.084	ADL 17585
P11	NW 1/4 SW 1/4 SW 1/4	9.984	ADL 17585

**NOTES**

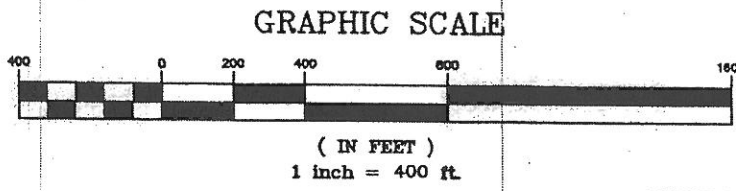
1. BEARINGS AND DISTANCES SHOWN HEREIN ARE CORRECT.

2. HORIZONTAL COORDINATES ARE ALASKA STATE PLANE COORDINATES ON THE CHANGING EARTH BEARING 54° 46' 00" N 111° 04' 00" W.

3. THE UPLAND AND WETLAND AREAS SHOWN HEREON ARE BASED ON THE PARCELS SURVEYED FOR ADL 3015 AND THE MONUMENTS SHOWN HEREON AS RECORDED THIS SURVEY.

4. THE MEAN HIGH WATER LINE OF COOK INLET WAS OBTAINED FROM DATA DOWN ON ADL 3015 WHICH NOTED 1986 AND 1988 SURVEYS FROM LAND SURVEYED BY USACE. THE TRAIL BEACH MARKS AT NORTH TUGSLANDS LEACH BEACH CREEK BY THE USACE JULY 12, AUGUST 12, 1988.

30 | 29  
31 | 32



SHEET: 2 of 3

# Exhibit "B"

## Nicolai Creek Unit Agreement-Unit Area

Nicolai Creek Unit Tract Number	Description of Participating Lands	Gross Acres	Committed Participating Acreage	Lessor/Royalty Owner/Lease Serial No.	Royalty Interest	ORRI Owners	Overriding Royalty Interest	Working Interest Owners & Percentage Working Interest	Expiration Date	Recording	
										Book	Page
1	T11N, R12W, S.M. Section 20: W1/2	320.00	320.00	State of Alaska ADL-63279	0.125*	Alice F. & J. Bailey Hinkle Mitsue & Robert K. Masuda Keiso & Marcella T. Masuda Donald L. Stroble Alice Coulthard Hatsuyo & Etsuo Miyamoto Jayne Y. & Fred S. Hokama Rose M. & Bernard Maresh Ruth S. & Mobley Pharis Patricia & Jack B Conway Laverna I. Traxinger John R. Roderick David Boelens total	0.0025794 0.0028571 0.0028571 0.0025794 0.0025794 0.0028571 0.0025794 0.0025794 0.0025794 0.0025794 0.0025794 0.0012500 0.0100000 0.0404565	Aurora 1.00	HBP	N/A	N/A
2	T11N, R12W, S.M. Section 29 & 30: 45.30 acres, as Unsurveyed, being all that portion of Sec.29; N1/2NW1/4SW1/4 & S1/2NW1/4SW1/4 comprising approximately 23.0 acres both lying directly landward of shoreline, along the line of mean high tide of the Cook Inlet, & all of the SW1/4SW1/4NW1/4 comprising approximately 10.0 gross acres; and being all that Unsurveyed portion of Section 30: E1/2 NE1/4SE1/4 lying directly landward of shoreline, along the line of mean high tide of the Cook Inlet, comprising approximately 12.30 acres.	45.30	45.30	BLM AA-8426	0.125	Alice F. & J. Bailey Hinkle Mitsue & Robert K. Masuda Keiso & Marcella T. Masuda Donald L. Stroble Alice Coulthard Hatsuyo & Etsuo Miyamoto Jayne Y. & Fred S. Hokama Rose M. & Bernard Maresh Ruth S. & Mobley Pharis Patricia & Jack B Conway Laverna I. Traxinger John R. Roderick David Boelens total	0.0025794 0.0028571 0.0028571 0.0025794 0.0025794 0.0028571 0.0025794 0.0025794 0.0025794 0.0025794 0.0025794 0.0012500 0.0100000 0.0404565	Aurora 1.00	HBP	N/A	N/A

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Exhibit "B"

Nicolai Creek Unit Agreement-Unit Area

DIVISION OF  
OIL AND GAS

Nicolai Creek Unit Tract Number	Description of Participating Lands	Gross Acres	Committed Participating Acreage	Lessor/Royalty Owner/Lease Serial No.	Royalty Interest	ORRI Owners	Overriding Royalty Interest	Working Interest Owners & Percentage Working Interest	Expiration Date	Recording	
										Book	Page
3	T11N, R12W, S.M. Section 29: 37.542 acres, as UNSurveyed, being all tide and submerged lands within the S1/2NW1/4SW1/4 and all of the N1/2SW1/4SW1/4.	37.542	37.542	State of Alaska ADL-17585	0.125*	David Boelens	0.0100000	Aurora 1.00	HBP	N/A	N/A
4	T11N, R12W, S.M. Section 30: 7.903 acres, as UNSurveyed, being all tide and submerged lands within the SE1/4NE1/4SE1/4	7.903	7.903	State of Alaska ADL-17598	0.125*	David Boelens	0.0100000	Aurora 1.00	HBP	47	83
Total		410.745	410.745								

\* Currently subject to Royalty Reduction Relief at .05

Recapitulation of UNIT AREA Land Categories		Percentage
State Land:	365.445	0.8897126
BLM Land:	45.300	0.1102874
Total	410.745	1.0

Recapitulation of Working Interest Ownership

Aurora 1.00

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Exhibit "B-1"

Nicolai Creek South Participating Area

Nicolai Creek Unit Tract Number	Description of Participating Lands	Gross Acres	Tract Participation Factor (Participating Area)	Committed Participating Acreage	Lessor/Royalty Owner/Lease Serial No.	Royalty Interest	ORRI Owners	Overriding Royalty Interest	Working Interest Owners & Percentage Working Interest	Expiration Date
2	T11N, R12W, S.M. Section 29 & 30: 4.10 acres, as Unsurveyed being all that portion of Sec 29 SW1/4NW1/4SW1/4 lying directly landward of shoreline, along the line of mean high tide of the Cook Inlet, comprising approximately 1.80 gross acres; and being all that Unsurveyed portion of Section 30: SE1/4 NE1/4SE1/4 lying directly landward of shoreline, along the line of mean high tide of the Cook Inlet, comprising approximately 2.30 acres.	4.10	0.1013321	4.10	BLM AA-8426	0.125	Alice F. & J. Bailey Hinkle Mitsue & Robert K. Masuda Keiso & Marcella T. Masuda Donald L. Stroble Alice Coulthard Hatsuyo & Etsuo Miyamoto Jayne Y. & Fred S. Hokama Rose M. & Bernard Maresh Ruth S. & Mobley Pharis Patricia & Jack B Conway Laverna I. Traxinger John R. Roderick David Boelens total	0.0025794 0.0028571 0.0028571 0.0025794 0.0025794 0.0028571 0.0025794 0.0025794 0.0025794 0.0025794 0.0025794 0.0012500 0.0100000 0.0404565	Aurora 1.00	HBP
3	T11N, R12W, S.M. Section 29: 28.458 acres, as UNSurveyed, being all tide and submerged lands within the SW1/4NW1/4SW1/4 and all of the N1/2SW1/4SW1/4	28.458	0.7033440	28.458	State of Alaska ADL-17585	0.125*	David Boelens Mental Health Trust Land Office total	0.0100000 0.0050000 0.0150000	Aurora 1.00	HBP
4	T11N, R12W, S.M. Section 30: 7.903 acres, as UNSurveyed, being all tide and submerged lands within the SE1/4NE1/4SE1/4	7.903	0.1953239	7.903	State of Alaska ADL-17598	0.125*	David Boelens Mental Health Trust Land Office total	0.0100000 0.0050000 0.0150000	Aurora 1.00	HBP
Total:		40.461	1.0000000	40.461						

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\* Currently subject to Royalty Reduction Relief at .05

Recapitulation of PARTICIPATING AREA Land Categories	Percentage
State Land:	36.361 0.8986679
Other Land:	4.100 0.1013321
Total	40.461 1.0000000

Recapitulation of Working Interest Ownership
Aurora 1.00

ATTACHMENT 5



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Exhibit "B-2"

Nicolai Creek North Participating Area

Nicolai Creek Unit Tract Number	Description of Participating Lands	Gross Acres	Tract Participation Factor (Participating Area)	Committed Participating Acreage	Lessor/Royalty Owner/Lease Serial No.	Royalty Interest	ORRI Owners	Overriding Royalty Interest	Working Interest Owners & Percentage Working Interest	Expiration Date
	T11N, R12W, S.M Section 20: W1/2	320.00	1.0000000	320.00	State of Alaska ADL-63279		Alice F. & J. Bailey Hinkle Mitsue & Robert K. Masuda Keiso & Marcella T. Masuda Donald L. Stroble Alice Coulthard Hatsuyo & Etsuo Miyamoto Jayne Y. & Fred S. Hokama Rose M. & Bernard Maresh Ruth S. & Mobley Paris Patricia & Jack B Conway Laverna I. Traxinger John R. Roderick David Boelens	0.0025794 0.0028571 0.0028571 0.0025794 0.0025794 0.0028571 0.0025794 0.0025794 0.0025794 0.0025794 0.0025794 0.0012500 0.0100000		
							total	0.0404565		

Total 320.00 1.0 320.00

Currently subject to Royalty Reduction Relief at .05

Recapitulation of PARTICIPATING AREA Land Categories	Percentage
State Land:	320.00 1.0
Other Land:	- -
Total	320.00 1.0

Recapitulation of Working Interest Ownership

Aurora 1.00

ATTACHMENT 6

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Exhibit "B-3"

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Nicolai Creek Beluga Participating Area

Nicolai Creek Unit Tract Number	Description of Participating Lands	Gross Acres	Tract Participation Factor (Participating Area)	Committed Participating Acreage	Lease/Royalty Owner/Lease Serial No.	Royalty Interest	ORRI Owners	Overriding Royalty Interest	Working Interest Owners & Percentage Working Interest	Expiration Date
2	T11N, R12W, S.M. Section 29 & 30: 45.30 acres, as Unsurveyed, being all that portion of Sec 29 N1/2NW1/4SW1/4 & S1/2NW1/4SW1/4 comprising approximately 23.0 acres both lying directly landward of shoreline, along the line of mean high tide of the Cook Inlet, & all of the SW1/4SW1/4NW1/4 comprising approximately 10.0 gross acres; and being all that Unsurveyed portion of Section 30: E1/2 NE1/4SE1/4 lying directly landward of shoreline, along the line of mean high tide of the Cook Inlet, comprising approximately 12.30 acres.	45.30	0.5609699	45.30	BLM AA-8426	0.125	Alice F. & J. Bailey Hinkle Mitsue & Robert K. Masuda Keiso & Marcella T. Masuda Donald L. Stroble Alice Coulthard Hatsuyo & Etsuo Miyamoto Jayne Y. & Fred S. Hokama Rose M. & Bernard Maresch Ruth S. & Mobley Pharis Patricia & Jack B Conway Laverna I. Traxinger John R. Roderick David Boelens total	0.0025794 0.0028571 0.0028571 0.0025794 0.0025794 0.0028571 0.0025794 0.0025794 0.0025794 0.0025794 0.0012500 0.0100000 0.0404565	Aurora 1.00	HBP
3	T11N, R12W, S.M. Section 29, 27.55 acres, as UNSurveyed, being all tide and submerged lands within S1/2NW1/4SW1/4 and all of the NW1/4SW1/4SW1/4	27.550	0.3411638	27.550	State of Alaska ADL-17585	0.125*	David Boelens Mental Health Trust Land Office total	0.0100000 0.0050000 0.0150000	Aurora 1.00	HBP
4	T11N, R12W, S.M. Section 30: 7.903 acres, as UNSurveyed, being all tide and submerged lands within the SE1/4NE1/4SE1/4	7.903	0.0978663	7.903	State of Alaska ADL-17598	0.125*	David Boelens Mental Health Trust Land Office total	0.0100000 0.0050000 0.0150000	Aurora 1.00	HBP
Total		80.753	1.000	80.753	Currently subject to Royalty Reduction Relief at .05					
Recapitulation of PARTICIPATING AREA Land Categories				Percentage	Recapitulation of Working Interest Ownership					
State Land:				35.453	0.4390301					
BLM Land:				45.300	0.5609699					
Total				80.753	1.0000000					
					Aurora 1.00					

Aurora NCU revised\_SURVEYEDApplicationLeaseExbChrisBLM

ATTACHMENT 7



www.aurorapower.com  
Exhibit "M"

JAN 21 2005

DIVISION C  
OIL AND GAS

Mark Myers, Director  
Alaska Department of Natural Resources  
Division of Oil and Gas  
3601 C Street, Suite 1380  
Anchorage, Alaska 99503-5948

October 1, 2004

RE: Thirty-First Plan of Development  
NICOLAI CREEK UNIT  
STATE OF ALASKA  
Unit Agreement  
Nicolai Creek Unit Area

**Thirty-First Plan of Development and Operations**

Dear Mr. Myers:

Reference is made to the captioned Unit Agreement being DNR No. 14-08-0001-8913

Pursuant to Article X of the Nicolai Creek Unit Agreement, Aurora Gas, LLC, as designated Unit Operator, submits for approval this Thirty-First Plan of Development and Operations.

**A. DURATION:**

This plan shall be in effect from January 1, 2005, through December 31, 2005.

**B. DRILLING OPERATIONS DURING THE THIRTY-FIRST PLAN OF DEVELOPMENT AND OPERATIONS:**

No firm development wells are currently planned for the Plan Period. However, an extensive review and interpretation of the existing 3D seismic data will possibly lead to a new development well which will target stacked Carya 2 (Upper Tyonek) channel sands.

**C. REMEDIAL AND DEVELOPMENT WELL WORK DURING THE THIRTY-FIRST PLAN OF DEVELOPMENT AND OPERATIONS:**

No remedial well work is currently planned for the Plan Period.

The No. 2 Well is currently producing from the Carya 2.1-1, 2.1-2 and the 2.2-1 perforations found at 2,422'-76', 2,694'-2,714', 2,870'-76' & 2,892'-2,918'. Since production is declining rapidly, it is likely that there will be a recompletion of the Tsuga 2-8.2 and 2-8.3 sands found at 2,000'-10', 2,065'-80', 2,155'-65' and 2,240'-70', which have not been produced within the confines of the field to date.

JAN 2 2005

Also, the No. 1B Well is known to produce some sand and water from preliminary tests, so the sand-exclusion screens run upon recompletion during the Twenty-Eighth Plan Period are apparently damaged and will be replaced. If production cannot be sustained at commercially attractive rates from the existing Carya 2-4.2, 2-5.1 and 2-6.1 sands found at 3,191'-3,211', 3,371'-3,401' and 3,560'-75', a recompletion might be performed on the Tsuga 2-8.3 sands found at 2,307'-26' and 2,348'-75'.

**D. PRODUCTION:**

The initial production from the No. 1B Well is from the Carya 2.4-2, 2.5-1 and the 2.6-1 perforations found at 3,191'-3,211', 3,371'-3,401', and 3,560'-75', respectively. Cumulative production from the No. 1B well through August, 2004, is 1,974 mcf. Additional perforations may be added to these completions as production (see Section C above) and the operations related thereto continue.

The initial production from the No. 2 Well is from the Carya 2.1-1, 2.1-2 and the 2.2-1 perforations found at 2,422'-76', 2,694'-2,714', 2,870'-76' & 2,892'-2,918' respectively. Cumulative production from the No. 2 well through August, 2004, is 367,659 mcf. Additional perforations may be added to these completions as production (see Section C above) and the operations related thereto continue.

The initial production from the No. 9 Well is from the Tsuga 2.8-1 perforations found at 1,320'-30', 1,343'-93' and 1,407'-47'. Cumulative production from the No. 9 well through August, 2004, is 440,855 mcf. Additional recompletion opportunities have been identified for later attention in subsequent years.

The No. 1B, No. 2 and No. 9 wells combined have produced a cumulative total of 810,488 mcf through August, 2004, since production was restored in August, 2003, during the Twenty-Ninth Plan Period.

Gas production and sales from the No. 3 Well have been curtailed since February, 2004, when a workover was undertaken to add additional perforations in the Tsuga 2-8.1 sand interval. Once production is restored, production from the Carya 2-1.1, 2-1.2, and 2-2.1 perforations found at 1,900'-50', 2,005'-32' and 2,201'-38' will be commingled with these new shallower zones. Cumulative production from the No. 3 well through August, 2004, is 1,890,838 mcf, which includes 893,000 mcf of production prior to the Aurora recompletion in early 2001. Production is expected to be restored at a nominal rate of between 500-1,000 mcf per day in the Thirty-First Plan of Development Period.

**E. PLANNED FIELD MODIFICATION AND OPERATION:**

JAN 21 2005

No additional major modifications or additions to field operations are planned.

DIVISION OF

**F. WELL DATA:**

Drilling-	0	
Producing-	4	(No. 3 ,No. 1B & No. 2, No. 9)
Shut-in Pending Facility Installation-	0	
Suspended-	0	
Abandoned-	2	(No. 4 & 6)

**G. DRILLING / WORKOVER / FIELD MODIFICATION DURING THE THIRTIETH PLAN OF DEVELOPMENT AND OPERATIONS:**

The No. 3 Well was worked over during the Thirtieth Plan Period, with additional sets of perforations added at 1,494'-1,502', 1,506'-12' and 1,516'-42' in the Tsuga 2-8.1 sand interval.

**H. OWNERSHIP / OPERATOR CHANGES DURING THE THIRTIETH PLAN OF DEVELOPMENT AND OPERATIONS:**

There were no changes during the Thirtieth Plan Period.

**I. OWNERSHIP / OPERATORSHIP CHANGES DURING THE *Thirty-First* PLAN OF DEVELOPMENT AND OPERATIONS:**

None planned.

Aurora Gas, LLC, designated as Unit Operator, reserves the right to modify the Plan of Development and Operations if economic or geological factors warrant; however, such modifications are not to be commenced without prior consent of the Department of Natural Resources.

Your approval of this submitted Plan is respectfully requested.

Sincerely,  
Aurora Gas, LLC

By: Randall D. Jones, CPL  
for Andrew C. Clifford  
Executive Vice President

aurora ncu 2005 pod-revised

ATTACHMENT 9

## STATE OF ALASKA

## ALASKA OIL AND GAS CONSERVATION COMMISSION

333 West Seventh Avenue, Suite 100

Anchorage Alaska 99501

Re: THE APPLICATION OF Conservation Order  
 Aurora Gas, LLC ) No. 478  
 for an order granting an )  
 exception to the )  
 spacing requirements of 20 ) Nicolai Creek Unit  
 AAC 25.055(a)(2) ) Wells  
 and (a)(4) to provide for the ) No. 1B, No. 2 and  
 drilling and testing ) No. 8  
 of the Nicolai Creek Unit ) Drilling and Testing  
 Wells No. 1B, No. 2 )  
 and No. 8 in an undefined )  
 gas pool. )  
 ) September 5, 2002

**IT APPEARING THAT:**

- 1) Aurora Gas, LLC ("Aurora") by letter dated July 12, 2002 has requested an order from the Alaska Oil and Gas Conservation Commission ("Commission") allowing a spacing exception in accordance with 20 AAC 25.055 to drill and test the Nicolai Creek Unit No. 1B and No. 8 wells and recompleat and test the No. 2 well within 3000 feet of each other and within 1500 feet of a property line.
- 2) The Commission published notice of opportunity for public hearing in the Anchorage Daily News on July 17, 2002, and the Peninsula Clarion on July 19, 2002, pursuant to 20 AAC 25.540.
- 3) On August 5, 2002 the Alaska Mental Health Trust Land Office requested that the tentatively scheduled hearing be held.
- 4) On August 19, 2002 the Alaska Mental Health Trust Land Office withdrew the request for the hearing. Subsequently, the Commission decided to issue an order without a public hearing.
- 5) On August 26 and 28, 2002 Aurora provided a corrected exhibit and accompanying text to the July 12, 2002 application for spacing exception.

**FINDINGS:**

- 1) The surface location of the Nicolai Creek Unit Well No. 1B well is 2018' from the south line (FSL) and 195' from the west line (FWL), Section 29, T11N, R12W, Seward Meridian (SM).



The top of the anticipated productive interval is 1637' FSL and 97' FWL, Section 29, T11N, R12W, SM. The projected bottom hole location for this well is 1637' FSL and 97' FWL, Section 29, T11N, R12W, SM

2) The surface location of the Nicolai Creek Unit Well No. 2 is 2018' FSL and 205' FWL, Section 29, T11N, R12W, SM. The top of the anticipated productive interval is 1176' FSL and 696' FWL, Section 29, T11N, R12W, SM. The projected bottom hole location for this well is 877' FSL and 870' FWL, Section 29, T11N, R12W SM

3) The surface location of the Nicolai Creek Unit Well No. 8 well is 2030' FSL and 245' FWL, Section 29, T11N, and R12W SM. The top of the anticipated productive interval is 2030' FSL and 245' FWL, Section 29, T11N, R12W SM. The bottom hole location is 203' FSL and 245' FWL, Section 29, T11N, R12W, SM.

4) The anticipated productive interval of Nicolai Creek Unit Wells 1B, 2 and 8 are within 1500 feet of a property line between State of Alaska and Bureau of Land Management leases.

5) Currently subsurface control in the Nicolai Creek Unit is inadequate to constrain with certainty the productive limits of the reservoir. However, Aurora's interpretation of the present well and seismic control suggests that the reservoirs and structure are complex.

6) Gas production from the Nicolai Creek Unit has come from an undefined gas pool in the Tyonek Formation. The individual sands are named sequentially by depth prefixed by the letter T.

7) The Nicolai Creek Unit Well No. 1B is proposed to be perforated in the T 2350 @ (-2557' sstvd), T3330 @ (-3074'), T3450 @ (-3162'), and T3650 @ (-3347') sands.

8) The Nicolai Creek Unit Well No. 2 is proposed to be perforated in the T1900 @ (-2070'), T2000 @ (-2242'), and T2200 @ (-2419') sands.

9) Nicolai Creek Unit Well No. 8 is proposed to be perforated in three Beluga Formation sands that have not been previously developed and overly the undefined Tyonek Formation gas pool.

10) An exception to the well spacing provisions of 20 AAC 25.055 (a)(2) and 20 AAC 25.055 (a)(4) is required for the drilling and testing of wells in a common pool within 3000 feet of each other and within 1500 feet of a property line where ownership changes.

11) Aurora sent notice of the application for spacing exception by certified mail to all offset owners, landowners, and operators of all properties within 3000 feet of the proposed productive intervals in Nicolai Creek Unit Wells No. 1B, No. 2 and No. 8.

## CONCLUSIONS:

1) An exception to 20 AAC 25.055 (a)(2) and 20 AAC 25.055 (a)(4) is necessary to allow drilling and testing of the Nicolai Creek Unit Wells No. 1B, No. 2 and No. 8.

2) Granting a spacing exception to allow drilling and testing of the Nicolai Creek Unit Wells No. 1B and No. 8 and to recompleat and test the No. 2 will not result in waste or jeopardize the correlative rights of adjoining or nearby owners.

- 3) Additional control, including additional seismic data and information obtained through the drilling and production of the subject wells may improve the definition of the limits of the reservoirs.
- 4) Before regular production is permitted from the Nicolai Creek Unit Wells No. 1B, No. 2 and No. 8, the Commission must take such action as will offset any advantage which the person securing the exception may have over other producers by reason of the drilling and testing of the wells as an exception, and so that drainage to the tract with respect to which the exception is granted will be prevented or minimized. AS 31.05.100(b).

**NOW, THEREFORE, IT IS ORDERED:**

Aurora's application for exception to the well spacing provisions of 20 AAC 25.055 (a)(2) and 20 AAC 25.055 (a)(4) for the purpose of drilling and testing the Nicolai Creek Unit No. 1B and No. 8 wells and for the purpose of recompleting and testing the No. 2 well is approved. The Nicolai Creek Unit Wells No. 1B, No. 2 and No. 8 may not be placed on regular production until the Commission takes additional action, upon petition, and after notice and hearing, to offset any advantage a landowner or owner may have by reason of the Nicolai Creek Unit Wells No. 1B, No. 2 and No. 8 having been drilled to the exception locations.

**DONE at Anchorage, Alaska** and dated September 5, 2002.

Cammy Oechsli Taylor, Chair  
Alaska Oil and Gas Conservation Commission

Daniel T. Seamount, Jr., Commissioner  
Alaska Oil and Gas Conservation Commission

**Conservation Order Index**



Attachments 10

**STATE OF ALASKA****ALASKA OIL AND GAS CONSERVATION COMMISSION****333 West Seventh Avenue, Suite 100****Anchorage Alaska 99501**

Re: THE APPLICATION OF AuroraGas, LLC ) Conservation Order No. 478A  
 for an order allowing regular production )  
 from Nicolai Creek Unit Wells No. 1B, No. 2 ) Nicolai Creek Unit No. 1B, No. 2  
 2, and No. 9 in an undefined gas pool. ) and No. 9  
 )  
 ) October 16, 2003

**IT APPEARING THAT:**

- 1) The Commission published a notice of public hearing in the Anchorage Daily News on July 17, 2002 and in the Peninsula Clarion on July 19, 2002, of an application by Aurora Gas, LLC ("Aurora") for a spacing exception to complete and produce three wells, Nicolai Creek Unit ("NCU") No. 1B, No. 2 and No. 8.
- 2) Aurora sent notice of the application by certified mail to all offset owners, landowners, and operators of all properties within 3000 feet of the proposed productive intervals in NCU No. 1B, No. 2 and No. 8, as required by 20 AAC 25.055(d).
- 3) No objection to the application was received by the Commission.
- 4) In Conservation Order No. 478 ("CO 478"), issued September 5, 2002, the Commission granted Aurora's application but provided that the NCU No. 1B, No. 2 and No. 8 wells could not be placed on regular production until the Commission took additional action to offset any advantage a landowner or owner may have by reason of the wells having been drilled to the exception locations.
- 5) NCU No. 8 was not drilled because Aurora encountered a shallow obstruction while driving conductor pipe. The conductor was pulled, the rig moved 7 feet to the east, and the NCU No. 9 well was permitted and drilled as a replacement well. In this order, references to "NCU No. 9" include NCU No. 8 as applicable.
- 6) Aurora, by letter dated September 25, 2003, and received by the Commission that same day, has now requested that the Commission allow Aurora to place the Nicolai Creek Unit No. 1B, No. 2, and No. 9 wells on regular production as soon as facilities are complete.

**FINDINGS:**

- 1) Newly acquired 3D seismic data and information obtained through drilling the NCU No. 9 well have allowed Aurora to better define the limits of the NCU gas reservoirs. Based on this improved understanding, Aurora is proposing changes to the existing Nicolai Creek Unit and Participating Area ("PA") boundaries. These changes will include Federal acreage on the north side of the property line that currently separates Federal and State acreage and exclude some State acreage in ADL 17585.
- 2) Aurora is the only owner within 3000 feet of NCU No. 1B, No. 2 and No. 9.
- 3) The proposed expanded PA will encompass NCU No. 1B, No. 2 and No. 9. All properties within 1500 feet of each of these wells will be included, in whole or in part, in the expanded PA.

- 4) It is expected to take no more than 100 days to obtain the necessary approvals of the proposed changes to the NCU and PA from the Department of Natural Resources ("DNR") and the Bureau of Land Management ("BLM").
- 5) In the interim, Aurora proposes to report production from NCU No. 1B and No. 2 to DNR at a 5% royalty rate, and production from NCU No. 9 to BLM using a 12.5% royalty rate. If DNR and BLM approve Aurora's proposed revisions to the NCU and PA and associated tract participation percentages, Aurora will submit revised royalty and operator reports to DNR and BLM retroactive to the first day of production according to terms of the Nicolai Creek Unit Agreement.
- 6) DNR and BLM have consented to Aurora's interim royalty payment methodology.
- 7) Allocation of gas resources to individual leases will require evaluation of technical data such as seismic, petrophysical, gas properties, reservoir pressure and temperature to arrive at equitable division of royalties.

## CONCLUSIONS:

- 1) An expanded NCU PA encompassing the NCU No. 1B, No. 2 and No. 9 wells and including, in whole or in part, all properties within 1500 feet of these wells will satisfy the objective of offsetting any advantage a landowner or owner may have by reason of the wells having been drilled to the exception locations, and regular gas production from these wells within such an expanded PA will not result in waste or jeopardize the correlative rights of adjoining or nearby owners
- 2) Payment of royalties according to Aurora's interim plan for a period of not more than 100 days, subject to retroactive adjustment when the proposed PA expansion is approved, will adequately protect holders of affected property interests.
- 3) If a PA expansion that meets the description set out in Conclusion 1 is not effected within 100 days after regular production commences from the NCU No. 1B, No. 2, or No. 9 well, the Commission may need to revisit the conditions under which further regular production from those wells is approved.
- 4) Additional notice and public hearing prior to approving regular gas production from the Nicolai Creek Unit are not necessary under the circumstances and conditions of this order.
- 5) Regular reservoir pressure measurements will be required to perform volumetric and material balance calculations.

## NOW, THEREFORE, IT IS ORDERED:

- 1) Aurora's request to begin regular production from NCU No. 1B, No. 2 and No. 9 is approved, subject to the condition that if an expanded PA meeting the description set out in Conclusion 1 is not effected within 100 days after regular production commences from the NCU No. 1B, No. 2, or No. 9 well, the Commission will determine whether other or additional conditions will be imposed on further regular production from those wells in order to offset any advantage a landowner or owner may have by reason of the wells having been drilled to the exception locations. Such other or additional conditions may be made effective as of the date of first production from NCU No. 1B, No. 2 or No. 9.
- 2) Aurora shall keep the Commission timely informed in writing of the status of its proposed changes in the NCU and PA.
- 3) Prior to regular production, Aurora shall take a pressure measurement on each well to determine initial reservoir pressure.
- 4) Aurora shall perform a minimum of one bottom-hole pressure measurement per well annually to monitor reservoir pressure. The surveys required in Rule 3 rule may be used to fulfill the minimum requirements. A common datum for measurements in production intervals, if in communication, shall be established by the operator at a relevant depth in feet subsea. Pressure surveys may be stabilized static pressure measurements at

or near the production zone or extrapolated from surface (single phase fluid conditions), pressure fall-off, pressure buildup, multi-rate tests, drill stem tests, and open-hole formation tests. Pressure data must be representative of reservoir conditions for use in material balance and volumetric calculations.

5) Aurora shall submit data and results from pressure surveys in an annual reservoir surveillance report on or before April 1 of each year. The report must include future development plans, reservoir depletion plans, and surveillance information for the prior calendar year, including:

- a. reservoir pressure map at datum, summary and analysis of reservoir pressure surveys within the pool;
- b. results and, where appropriate, analysis of production surveys, tracer surveys, and any other special monitoring; and
- c. review of pool production allocation factors and issues over the prior year. All data necessary for analysis of each survey need not be submitted with the report but must be available to the Commission upon request.

6) Unless notice and public hearing is otherwise ordered, the Commission may administratively waive the requirements of or administratively amend any rule stated above as long as the change does not promote waste or jeopardize correlative rights, is based on sound engineering and geoscience principles, and will not result in an increased risk of fluid movement into freshwater.

**DONE** at Anchorage, Alaska and dated October 16, 2003.

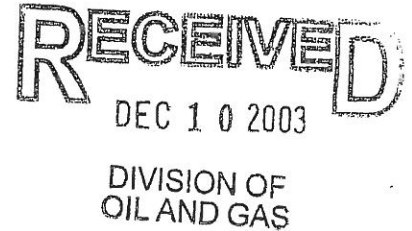
Daniel T. Seamount, Jr., Commissioner  
Alaska Oil and Gas Conservation Commission

Randy Ruedrich, Commissioner  
Alaska Oil and Gas Conservation Commission



December 8, 2003

Alaska Department of Natural Resources  
Division of Oil and Gas, Units Section  
550 W. 7<sup>th</sup> Avenue, Suite 800  
Anchorage, Alaska 99501  
Attn: Chris Ruff



Re: Expansion of Nicolai Creek Unit

Dear Mr. Ruff:

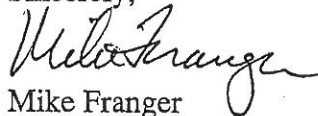
The Trust Land Office (TLO) has reviewed the information associated with the application of the expansion of the Nicolai Creek Unit that has been submitted by Aurora Gas, LLC (Aurora). While the federal government currently manages the oil and gas interests associated with Trust lands in the Unit, 90% of lease revenues derived from Trust land within the Unit will be forwarded to the Trust, giving the Trust a significant stake in the outcome of decisions made by the State of Alaska on this matter. With that in mind, the TLO has the following observations and comments:

1. The information that was submitted by Aurora at their preliminary application meeting on August 12, 2003 has been reviewed by the TLO and our consultant (Petrotechnical Resources Alaska, or PRA). A subsequent discussion between PRA and Andy Clifford at Aurora clarified some of the information presented. Andy indicated at that time that he was still refining some of his interpretations for the formal application submittal, but he did not expect to change the participating areas or unit boundary from what was presented at the 8/12/03 meeting.
2. The Aurora application was formally submitted on September 12, 2003. The configuration of the gas pools and the associated proposed participating areas were changed significantly from what was presented a month earlier, although to our knowledge no new data had been obtained by Aurora in that period of time. The productive acreage depicted on land the Trust has an interest in was reduced by over 50 % from the August submittal to the September one.
3. PRA met with Andy Clifford and Don Krouskop on September 24, 2003 to review the seismic and other data on which Aurora is basing their application. The consensus following that meeting was that the existing data is ambiguous and it is difficult to map individual reservoirs accurately.
4. There has been a significant amount of discussion about how to determine the outline of the proposed Participating Areas (PAs) within the proposed expanded Unit because the existing data is not definitive. Any interpretation of the data is only a geological model of the subsurface. An interpretation provides a framework for discussion from which

negotiation begins to reach a mutually acceptable outcome for all parties. Recognizing that Aurora has expended a significant amount of money collecting and interpreting data in the area, the TLO is inclined to refer to Aurora's original August submittal with respect to the proposed PAs. We realize that questions have been raised regarding the data that would support the original proposed Northern PA, but the same can be said regarding the data that would justify the reconfiguration of the Southern PA in the most recent proposal.

5. Aurora's original proposed Unit and PA boundaries should be modified because they have included acreage that their own interpretation indicates will not produce hydrocarbons.
6. The TLO supports the establishment of two PAs in the South and the requirement of a method of redetermination (including the Northern PA) in the future that is based on new data and is retroactive to the date of first production.
7. Because the existing data is ambiguous and open to interpretation, there is no absolute reason to believe that the acreage between the Northern and Southern PAs could not contain hydrocarbons. We request that further testing be required to try to determine this. In the absence of another well in this area (such as the previously proposed No. 7 well), we would like to see a pressure communication test between NCU #3 and NCU #9 to help determine if there is pressure communication across the projected cross fault separating the Northern and Southern PAs. Further, Aurora should provide a detailed cross-section between NCU #3 and NCU #9 to show the juxtaposition of the Tyonek and Beluga reservoirs at the projected cross fault.

Sincerely,



Mike Franger  
Senior Resource Manager

Cc: Stephen C. Planchon  
Steve Martinez, BLM  
Paul Daggett-PRA



## STATE OF ALASKA

Exhibit "K"  
DEPARTMENT OF NATURAL RESOURCES  
OFFICE OF THE COMMISSIONER

Sarah Palin, Commissioner  
AOGCC  
333 W 7th Ave # 100  
Anchorage, Alaska 99501-3539

FI JK H. MURKOWSKI, GOVERNOR

- ☐ 400 WILLOUGHBY AVENUE  
JUNEAU, ALASKA 99801-1796  
PHONE: (907) 465-2400  
FAX: (907) 465-3886
- ☐ 550 WEST 7<sup>TH</sup> AVENUE, SUITE 1400  
ANCHORAGE, ALASKA 99501-3650  
PHONE: (907) 269-8431  
FAX: (907) 269-8818

September 25, 2003

RECEIVED  
JAN 21 2005

DIVISION OF  
OIL AND GAS


RE: Nicolai Creek Unit, Letter supporting production petition and setting out interim royalty payment methodology. Well Nos. 1B, 2, and 9

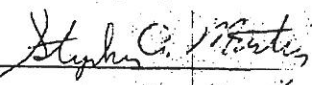
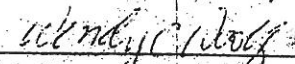
Dear Ms. Palin

The Department of Natural Resources (DNR), the Bureau of Land Management (BLM), and the Mental Health Trust Land Office (TLO) support Aurora Gas, LLC's (Aurora) petition to the AOGCC to allow Aurora to begin production from the Nicolai Creek Unit No. 1B, No. 2, and No. 9 (formerly well No. 8) wells, as soon as the facilities are completed. Aurora is currently prohibited from placing these wells on regular production under Conservation Order No. 478, dated September 5, 2002.

Aurora has acquired new 3-D seismic data over the area and is currently working with the DNR and BLM to revise the existing participating areas and the unit area. In order to ensure the royalties are paid to the proper parties and allow development to proceed timely, Aurora will report production from wells number 1B and 2 to the Division of Oil and Gas (Division) using accounting unit code NCPA and a 5% royalty rate. Aurora will report production from the number 9 well on lease AA 8426 to BLM using a 12.5% royalty rate. If the Division and BLM approves Aurora's forthcoming application to revise the PA and unit area and the new tract participation percentages, Aurora will submit revised royalty and operator reports to BLM and the Division back to the first day of production as provided for under Section 11 of the Nicolai Creek Unit Agreement.

Signatures of the parties agreeing to this royalty payment methodology are set out below. If you have any questions regarding this letter contact Mr. Christopher Ruff with the Division at 907-269-8451.

Sincerely,  
  
for Mark D. Myers  
Director

	Printed Name	Title	Signature	Date
BLM	Stephen A. Martinez			
TLO	Wendy C. Wolff	Deputy Director		7/25/06